UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
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June 22, 1998

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Re: Section 7 Consultation on the Effects of Continued Implementation of Land and Resource Management Plans on Endangered Species Act Listed Salmon and Steelhead in the Upper Columbia and Snake River Basins.

Dear Sirs and Mesdames:

This responds to your September 16, 1997, letter and attached biological assessment (BA) requesting section 7 consultation on 18 Land and Resource Management Plans/Resource Management Plans (collectively referred to as LRMPs). The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) determined that the LRMPs are not likely to adversely affect threatened endangered Snake River and upper Columbia River Steelhead. The September 16, 1997, letter also requested the BA be used to reinitiate section 7 consultation on the effects of the Snake River basin LRMPs on listed Snake River chinook and sockeye salmon. The USFS and BLM provided supplemental information to support this request on October 28, 1997. This consultation on salmon in the Snake River basin and steelhead in the Snake River basin and the upper Columbia River basins Evolutionary significant Units (ESUs is undertaken under section 7 (a) (2) of the Endangered Species Act (ESA) and its implementing regulations, 50 CFR part 402.

The USFS' and BLM's September 16, 1997, letter also requested reinitiation of consultation on previously completed Snake River salmon biological opinions (SBOs). A review of all existing SBOs will follow the release of this biological opinion (opinion). The interagency level 1 teams will review all ongoing project-specific activities. September 16, 1997, letter also requested reinititaion of consultation on previously completed Snake River salmon biological opinions (SBOs). A review of existing SBOs will follow the release of this biological opinion (opinion. The interagency level 1 team will review all ongoing project-specific SBOs will be prioritized and reconsidered by our interagency section 7 streamlining teams. That forum should provide the necessary level of information to determine whether those actions warrant further review for steelhead.

Five species listed under National Marine Fisheries Service (NMFS) ESA jurisdiction, Snake River sockeye salmon (Oncorynchus nerka), Snake River spring/summer chinook salmon (oncorhynchus tshawytcha), Snake River fall chinook salmon (O. Tshawytcha), Snake River steelhead (O. Mykiss), and upper Columbia River steelhead (O. Mykiss) are likely to occur on USFS and BLM administered lands and were considered during htis consultation. Continued implementation of LRMPs in the Snake River basin is within the desifntated critical habitat (excluding portions of the clearwater River) for ESA listed Snake River spring/ summer chinook, fall chinook, and sockeye salmon (December 28, 1993, 58 FR 68543).

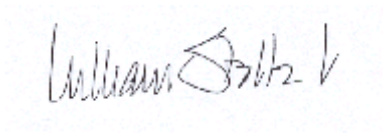
The NMFS has determined that continued implementation fo the 18 LRMPS is not likely to jeopardize the continued existence of Snake River salmon and steelhead or upper Columbia River steelhead. The NMFS also found that continued implementation of LRMPs in the Snake River basin is not likely to result in the destruction or adverse modification of designated critical habitat. Our staffs have spent months jointly developing BA recommendations and mechanisms to implement recommendations that reduce the likelihood of adverse effects on these species and their habitat; improve implementation of past commitments in PACFISH; address PACFISH deficiencies as a longer-term strategy; and improve monitoring and accelerate watershed restoration actions. These mechanisms are conveyed in their entirety in the attached opinion. Because these mechanisms added substantial focus and depth to the effects section, they can also be found in Appendix 2 without NMFS analysis. Careful adherence to all existing programmatic direction during project planning and implementation for the extended interim period will increase assurances that jeopardy will be avoided at the project level.

Our common interagency goal of improving implementation of the ESA section 7 process requires a renewed commitment to implement PACFISH. It will also require new efforts to ensure that each management unit fully internalizes available ESA direction, and fully embraces the BA recommendations and their implementing mechanisms described in this Opinion. The recommendations and mechanisms resulted from considerable collaboration by primary staff in your agencies, and are essential to ensure by working together with new direction and a renewed commitment past deficiencies such as low levels of restoration, ineffective monitoring, and

inconsistent PACFISH implimentation of this Opinion will significantly improve our consultation efficiency by shifting interagency efforts from project-by-project reviews to watersheds and programmatic approaches.

The BA and this Opinion were designed to correct key deficiencies in the interim (short-term) strategies (PACFHISH and related direction) for extended application until replaced by a long-term ecosystem-based approach. This Opinion shall remain valid, assuming the stated assumptions and requirements are met, until a long-term strategy and a related consultation have been completed. The NMFS greatly appreciates the efforts of the numerous members of your staff who contributed to the development of solutions to issues identified in this consultation.

Sincerely,



William Stelle, Jr.
Regional Administrator

Endangered Species Act - Section 7 Consultation

BIOLOGICAL OPINION

Land and Resource Management Plans for National Forests and Bureau of Land Management Resource Areas in the Upper Columbia River Basin and Snake River Basin Evolutionarily Significant Units

Agencies: Department of Agriculture, U.S. Forest Service; and Department of Interior, Bureau of Land Management

Consultation Conducted By: National Marine Fisheries Service, Northwest Region

Date Issued: June 22, 1998

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I. Statement of Action

The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) requested consultation on their Land and Resource Management Plans[1] (LRMPs) as amended or modified by PACFISH and/or the Northwest Forest Plan (NFP), including the adoption of nine recommendations to offset potential adverse effects to Endangered Species Act (ESA) listed salmon and steelhead described in a September 16, 1997, biological assessment (BA) and an October 28, 1997, BA supplement. Action agencies requested consultation on the following species and LRMPs.

1. For Snake River spring/summer and fall chinook salmon, and sockeye salmon:

   a.) Reinitiate consultation on LRMPs (amended by PACFISH) for the Snake River basin Evolutionarily Significant Unit (ESU) for portions of the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests; and

   b.) initiate consultation on LRMPs modified by PACFISH for the Snake River ESU for portions of the Baker, Challis, Cottonwood, and Lemhi BLM Areas.

2.) For Steelhead:

   Initiate consultation on LRMPs (as amended or modified by PACFISH) for the Bitterroot, Clearwater, and northern portion of the Nez Perce National Forests, Baker, Challis, Cottonwood, Lemhi Resource Areas of BLM (Snake River basin ESU); Wenatchee Resource Area, and the eastern portion of the Okanogan and Wenatchee National Forests (upper Columbia River ESU).

[1] Each National Forest is managed in accordance with an LRMP. The BLM administers management actions under either a Resource Management Plan or Management Framework Plan. In this biological opinion, all three planning documents are referred to as LRMPs. This Opinion evaluates 18 LRMPs on 17 administrative units (BLM Challis Resource Area Operates under two LRMPs).

These actions are further described below in section V, below.

II. Background

On August 18, 1997, National Marine Fisheries Service (NMFS) published a final rule listing five of 15 ESUs of northwest steelhead, three as threatened and two as endangered, under the ESA (Federal Register: August 18, 1997 [Vol. 62, 43937]). The listing became effective on October 17, 1997. Two of these five steelhead ESUs will be considered in this biological opinion (Opinion): the upper Columbia River basin and Snake River basin. The northwest area affected by these two ESUs includes portions of Washington and Oregon, and central Idaho.

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to ensure that any action it authorizes, funds, or carries out, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. In total, five species listed under NMFS ESA jurisdiction, Snake River sockeye salmon (*Oncorhynchus nerka*), Snake River spring/summer chinook salmon (*Oncorhynchus tshawytscha*), Snake River fall chinook salmon (*Oncorhynchus tshawytscha*), Snake River steelhead (*Oncorhynchus mykiss*), and upper Columbia River steelhead (*Oncorhynchus mykiss*) are likely to occur on USFS and BLM administered lands and are considered during this consultation. Throughout this Opinion all references to salmon and steelhead include those ESA listed species in the Snake and upper Columbia River ESUs.

The USFS and BLM in their September 16, 1997, letter initiated or reinitiated consultation on 18 LRMP for all five ESA listed salmon and steelhead and on designated critical habitat. The USFS and BLM BA and supplemental information considered effects of continued LRMP implementation on all five ESA listed species and on designated critical habitat in the Snake River basin. The USFS and BLM determined that if nine BA recommendations are adopted and implemented, their LRMPs are not likely to adversely affect ESA listed species or designated critical habitat.

III. Scope of LRMPs and Listed Species

Land management actions administered by the USFS and BLM are carried out in accordance with the LRMPs and amendments, under several scales of planning and decision documents. Depending on the geographic location of each National Forest and BLM District, LRMPs have been amended by either the NFP or the Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and California (PACFISH). For BLM LRMPs, PACFISH was implemented through instructional memoranda rather than formal LRMP amendments. Other amendments and modifications may apply to some LRMPs, but those are not considered in detail in this Opinion. This Opinion is limited to the LRMPs as amended or modified by PACFISH in the two steelhead ESUs: the upper Columbia River and the Snake River basins.

The Snake River basin includes overlapping distributions of Snake River spring/summer and fall chinook salmon (Federal Register: May 22, 1992 [Vol. 57, 14653]), and Snake River sockeye salmon (Federal Register: November 20, 1991 [Vol. 56, 58619]), all listed under the ESA. The effect of USFS Snake River basin LRMPs on these species has already been the subject of a section 7 consultation with NMFS. On March 1, 1995, NMFS issued a conditional no jeopardy Opinion to the USFS on their PACFISH amended LRMPs titled:

> "Endangered Species Act Section 7 Biological Opinion on Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests."

The March 1, 1995, Opinion did not address lands administered by Cottonwood BLM, Bitterroot, Clearwater, and northern portions of the Nez Perce National Forests outside of the Snake River basin ESU for listed salmon. These areas are now within the Snake River basin ESU for steelhead.

Similarly, the Wenatchee and Okanogan National Forests, and Spokane District BLM were not considered in the 1995 consultation, because they were outside of the Snake River basin salmon ESUs, but are now within the upper Columbia River basin steelhead ESU. None of the BLM LRMPs in the upper Columbia River or Snake River ESUs have previously been the subject of a section 7 ESA consultation with NMFS.

IV. Implementation of Section 7 Plan-Level Direction

In the March 1, 1995, Opinion, NMFS identified a set of goals, objectives, and guidelines that it would apply to watershed and site-specific consultations for Snake River salmon. This approach was designed to provide reasonable certainty that site-specific actions would not jeopardize the continued existence of listed salmon or result in the destruction or adverse modification of designated critical habitat during an interim period while long-term land management Environmental Impact Statements (EISs) were being developed.

The USFS responded to the March 1, 1995, Opinion in a June 29, 1995, letter stating that the guidelines in the Opinion would not be used as required terms and conditions. On August 9, 1995, NMFS, U.S. Fish and Wildlife Service (USFWS), USFS, and BLM signed a Memorandum of Agreement (MOA) which superseded the June 1995, letter and established a national interagency process to streamline project-specific section 7 consultations. Regional agency administrators updated the MOA on February 26, 1997. The MOA clarified conflicting agency positions by adopting interagency direction to follow the March 1, 1995, LRMP Opinion, PACFISH, NFP, and other plan-level conservation strategies in exchange for expedited project-specific consultation timeframes. The February 26, 1997, MOA is currently being used throughout Washington, Oregon, and Idaho.

The agencies adopted the streamlining MOA and issued plan-level Opinions to achieve several objectives. In the streamlining MOA, the agencies determined that PACFISH and interim Opinions provided substantial plan-level guidance that should:
(1) direct development of project-specific actions to avoid jeopardizing the continued existence of listed species;
(2) facilitate project-specific consultation; and (3) meet the overall goal of arresting the degradation, and begin the restoration of salmon and steelhead habitat.

The USFS and BLM adopted PACFISH to “hold the line” on habitat degradation for approximately 18 months until long-term strategies could be developed to manage salmon and steelhead habitat in an ecologically sound frame-work. Within the context of consulting on the actions described below, this

Opinion evaluates whether the interim plan-level direction implemented through the streamlining MOA has achieved its conservation objectives.

V. Continuing Federal Actions

The purpose of this section is to describe ongoing actions that require section 7 consultation under existing LRMPs. The USFS and BLM will also consult at the watershed or site-specific level as Federal actions are planned or conducted under the umbrella of the LRMPs that may affect listed species or designated critical habitat.

A. Continued LRMP Implementation

The USFS and BLM requested consultation on their LRMPs as amended or modified by PACFISH, including the adoption of nine recommendations to offset potential adverse effects to ESA listed salmon and steelhead described in the September 16, 1997, BA. These nine items are summarized below under "Additions to the Continuing Action." Each item is fully described in Appendix 1.

This consultation considers effects of management direction contained in the 18 LRMPs (approved between 1979-1990; Table 1) on ESA listed salmon and steelhead, and on designated critical habitat. Because the range of ESA listed steelhead overlaps and expands the action area considered in NMFS' March 1, 1995, Opinion and because that Opinion has expired, the USFS and BLM also requested reinitiation of consultation on Snake River salmon (September 16, 1997, letter from USFS and BLM to NMFS; and October 28, 1997, memorandum from Jack Williams, BLM, to Russell Strach, NMFS). Action agencies requested consultation on the following species and LRMPs.

Table 1. National Forests and BLM Resource Areas in the Upper Columbia River Basin and Snake River Basin ESUs, and listed species under ESA consideration.

Forest Service Unit	**Approval Date**	**Species Considered**
Bitterroot National Forest	September 1987	Snake River[2] (SR) Steelhead
Boise National Forest	April 1990	SR Salmon, SR Steelhead
Challis National Forest	June 1987	SR Salmon, SR Steelhead
Clearwater National Forest	September 1987	SR Steelhead
Nez Perce National Forest	October 1987	SR Salmon, SR Steelhead
Okanogan National Forest	December 1989	Upper Columbia River (UCR) Steelhead
Payette National Forest	May 1988	SR Salmon, SR Steelhead
Salmon National Forest	January 1988	SR Salmon, SR Steelhead
Sawtooth National Forest	September 1987	SR Salmon, SR Steelhead
Umatilla National Forest	June 1990	SR Salmon, SR Steelhead
Wallowa-Whitman National Forest	April 1990	SR Salmon, SR Steelhead
Wenatchee National Forest	January 1990	UCR Steelhead
Bureau of Land Management Unit	**Approval Date**	
Baker Resource Area - Resource Management Plan	July 1989	SR Salmon, SR Steelhead
Challis Resource Area - Ellis-Pahsimeroi Management Framework Plan - Challis Management Framework Plan	September 1982 July 1979	SR Salmon, SR Steelhead
Cottonwood Resource Area - Chief Joseph Management Framework Plan	November 1981	SR Salmon, SR Steelhead
Lemhi Resource Area - Lemhi Resource Management Plan	April 1987	SR Salmon, SR Steelhead
Wenatchee Resource Area - Spokane District Resource Management Plan	August 1985	UCR Steelhead

[2] Snake River salmon includes Snake River spring/summer chinook, Snake River fall chinook, or Snake River sockeye where they occur on USFS or BLM units.

These LRMPs (amended or modified by PACFISH) establish interim management direction in three areas. First, LRMPs establish desired future conditions through goals and objectives. Second, LRMPs provide standards and guidelines as the side-boards for reaching goals and objectives, and are to be applied to site-specific actions conducted under the LRMPs. Third, LRMPs project the allocation of forest and rangeland resources (how many and where goods and services may be produced.)

Each LRMP addresses a wide array of programs, including program direction for fish habitat, water quality, road building, timber production, minerals, controlled and wild fires, livestock grazing, recreation, and others. The LRMPs establish monitoring programs to determine whether LRMP direction is being met; and agency budget requests are tied to LRMP direction.

B. USFS and BLM Additions to the Continuing Action

The USFS and BLM adopted nine BA recommendations to reduce adverse effects from continued implementation of LRMPs amended or modified by PACFISH (September 16, 1997, letter from USFS and BLM to NMFS). These actions will, therefore, be considered part of the proposed or continuing action addressed in this Opinion. A summary of these nine items is provided below. For a complete description, see Appendix 1.

1) Extend indefinitely NMFS March 1, 1995, Opinion and all subsequent related direction, to all LRMPs in both steelhead ESUs in order to reduce adverse effects not previously the subject of consultation on LRMPs until such time as new, long-term plan-level direction is adopted for both salmon and steelhead;
2) Extend 17 Snake River basin biological opinion (SBO) provisions for salmon to include steelhead ESUs to assure that adverse effects are reduced or avoided;
3) Review actions conducted under LRMPs to assure that adverse effects are otherwise reduced or avoided;
4) Provide additional mitigative measures in steelhead strongholds in the Snake River basin ESU to reduce the potential of adverse combined effects;
5) Accelerate restoration of steelhead habitat in the Snake River basin ESU;
6) Review commercial permits and noncommercial recreational boating and floating as a Federal action;

7) Strengthen monitoring and commitment, as needed, associated with PACFISH to ensure the strategy is properly implemented;

8) Watersheds within the upper Columbia River basin ESU and Snake River basin ESU should be treated as key watersheds (as directed by PACFISH) and as designated critical habitat; and,

9) If adopted, these recommendations should be extended indefinitely, until such time as new, long-term, plan-level direction is adopted by the USFS and BLM for both salmon and steelhead.

C. Mechanisms to Implement BA Recommendations

Five mechanisms to implement the BA recommendations were developed through a series of interagency meetings with the USFS and BLM staff. All agencies agreed the five mechanisms were necessary to ensure successful implementation of the BA recommendations. The NMFS, therefore, considers the five mechanisms part of the proposed action. Subelements under each of the five mechanisms were also addressed and where possible agreed to through interagency efforts. All five mechanisms and their subelements are also listed in the Incidental Take Statement, section XIV, as terms and conditions (Appendix 2).

VI. Listed Species and Critical Habitat

The NMFS has listed a total of five anadromous fishes in the Snake and upper Columbia River basins under the ESA. These include: Snake River sockeye salmon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River steelhead, and upper Columbia River steelhead. These species are likely to occur on USFS and BLM administered lands (action area) and were considered during this consultation.

The action area is also within designated critical habitat for Snake River spring/summer and fall chinook salmon, and Snake River sockeye salmon (December 28, 1993, 58 FR 68543). An action area is defined (50 CFR § 402.02) as: "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

A. Snake and Upper Columbia River Basin Steelhead

Steelhead in the Columbia River are an anadromous form of redband trout (*Oncorhynchus mykiss*) (Behnke 1992). Part of their life history is spent in the ocean, and spawning occurs in freshwater streams. Steelhead in the upper Columbia River and Snake River basins are primarily summer-run fish which enter freshwater nine or 10 months prior to spawning. They are described as either “A” or “B” run fish, depending on when they pass over Bonneville Dam on the mainstem Columbia River.

Steelhead spawn in the upper Columbia River basin and Snake River basin ESUs from March to July, and enter streams several months before spawning. Juvenile steelhead have a variety of migration patterns that vary with local conditions; variables range from mostly genetic to mostly environmental (Behnke 1992). In some populations, steelhead may remain in natal streams before migrating to the ocean, but in others they migrate upstream or downstream soon after emergence to enter other rearing areas. In some watersheds, perhaps depending upon water temperatures and subsequent growth rates, parr remain in freshwater for up to seven years (Mullen et al. 1992).

Wild and naturally-reproducing stocks of steelhead have declined dramatically in the interior Columbia River Basin (Lee et al. 1997). Their decline is due to a variety of factors, but construction of dams along the Snake and Columbia Rivers is a primary cause (Meehan and Bjornn 1991). Loss and degradation of spawning and rearing habitats as well as the introduction of non-native fishes have also contributed to declines. Smolt-to-adult survival has declined from more than four percent in 1968 to approximately 1.5% during the early 1970s and to less than one percent in recent years (Raymond 1979; Lee et al. 1997; and R. Thurow, personal communication). The current known distribution of steelhead in the interior Columbia River basin includes approximately 41% of their historical range and they are classified as “strong” within only 1.3% of the remaining range (Lee et al. 1997).

As noted in section III. above, the distribution of steelhead within the upper Columbia River and Snake River basin ESUs overlaps that of ESA listed Snake River spring/summer and fall chinook salmon, and Snake River sockeye salmon. Those areas unique to steelhead are the Clearwater River subbasin, an expansion of the Snake River salmon ESU, and the upper Columbia River basin ESU in its entirety.

Only three subbasins in the Snake River and Upper Columbia River basin ESUs have wild steelhead that are unaffected by hatchery production (Idaho Department of Fish and Game 1996). These sub-basins are the Selway River (hydrologic unit codes (HUCs) 17060301 and 17060302), a Clearwater River tributary; the South Fork Salmon River (HUC 17060208), and the Middle Fork Salmon River (HUC 17060205 and those portions with the Middle Fork watershed of 17060206), both tributaries to the Salmon River. These subbasins are of a large enough size (about 750,000 acres or larger) to sustain genetically diverse subpopulations of wild steelhead. Thurow (1985 and 1987) documented genetic divergence among subpopulations in various tributaries to the Middle Fork Salmon River and South Fork Salmon River. Lee et al. (1997) identified smaller watersheds with strongholds of steelhead that would form the nucleus of a more widespread distribution of steelhead with little or no influence of non-indigenous stocks. With the exception of the Clearwater River subbasin, all Snake River basin strongholds appear to be within “high priority” watersheds identified as a result of NMFS’ March 1, 1995, LRMP Opinion.

Steelhead distribution and habitat quality is affected by varying objectives for watersheds addressed in the LRMPs (as amended or modified by PACFISH). Quigley et al. (1996) provided a recent assessment of the continued effects of LRMPs on ecosystems, but the information is provided only at the broad scale. Objectives in LRMPs vary from ecosystem restoration and maintenance in some larger rivers such as Rapid River, (tributary to the Little Salmon River), and the South Fork Salmon River, to long-term trade-offs of steelhead (and salmon) habitat for commodity production. Espinosa et al. (1997) documented that one LRMP did not protect salmon, and by inference steelhead; however, that LRMP was not amended by PACFISH for the period evaluated, nor was it a LRMP that placed priority of salmon and steelhead restoration above other discretionary actions.

Low run sizes over the last 10 years are most pronounced for naturally-produced steelhead, and average parr densities recently have dropped for both A and B run steelhead. Declines in abundance have been particularly serious for B-run steelhead, increasing the risk that some of the life history diversity may be lost from steelhead in these ESUs. Recently obtained information indicates low smolt survival and poor ocean production for Snake River steelhead in 1992-1994. Thus, NMFS remains concerned about steelhead abundances in the Snake River and the upper Columbia River basin ESUs.

B. Snake River Salmon and Critical Habitat

Three Snake River salmon populations listed as threatened or endangered under the ESA occur in Snake River basin National Forest and BLM areas. Snake River sockeye salmon (*Oncorhynchus nerka*) are listed as endangered (November 20, 1991, 56 FR 58619). Snake River spring/summer chinook salmon (*O. tshawytscha*) and Snake River fall chinook salmon (*O. tshawytscha*) are listed as threatened species (April 22, 1992 57 FR 14653).

The NMFS designated critical habitat for Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon on December 28, 1993 (58 FR 68543), effective on January 27, 1994. The designation of critical habitat provides notice to Federal agencies and the public that these areas and features are vital to the conservation of listed Snake River salmon.

Snake River sockeye salmon use the mainstem Snake River and mainstem Salmon River as a migration corridor to and from Redfish Lake, Idaho. This species spawns and rears only within the Sawtooth National Recreation Area on the Sawtooth National Forest. The sockeye salmon migration corridor extends through all other National Forests and BLM units within the Snake River basin action area except the Boise and Umatilla National Forests and Baker BLM Resource Area. With respect to sockeye salmon, only those actions which could potentially affect sockeye salmon spawning and rearing habitat on the Sawtooth National Forest and in the Snake and Salmon River migration corridor will be addressed in this Opinion.

Snake River fall chinook salmon do not spawn in, rear in, or migrate through the Bitterroot, Boise, Salmon and Challis, or Sawtooth National Forests, or the Lemhi or Challis Resource Areas. They may spawn, rear, and migrate in certain stream reaches in the Payette, Nez Perce, Clearwater, Umatilla, and Wallowa-Whitman National Forests, and Baker BLM Resource Area.

Listed Snake River spring/summer chinook salmon spawn, rear, or migrate in streams on nine Snake River basin National Forests covered by this Opinion. The Bitterroot National Forest is the only unit where listed spring/summer chinook salmon are not found. The effects of actions addressed in this Opinion will be most noticeable in relation to Snake River spring/summer chinook salmon, since their spawning and

rearing habitat is mainly located in upper river reaches and in tributaries in which habitat quality and, therefore, spawning and rearing success is closely linked to the effects of land management direction and site-specific actions.

Effects to the following essential features of designated critical habitat are possible from continued implementation of the LRMPs: water quality, substrate characteristics, food for juveniles, and cover/shelter. Effects to these essential features would also affect the biological requirements of Snake River steelhead. The listing status, biological information, and critical habitat elements for Snake River salmon are further described in Attachment 1.

C. Similarities and Differences Between Steelhead and Salmon

In general, life history requirements for chinook and sockeye salmon in the interior Columbia River basin are similar to those for steelhead except for the timing of spawning. Table 2 shows that steelhead requirements are closely met by objectives for listed salmon. Steelhead typically spawn in the spring, while salmon spawn in the summer and fall. Such pronounced differences do not occur with other life history stages. Differences are primarily associated with micro-habitat selection in the same streams suitable for occupation by both species. As noted by Meehan and Bjornn (1991) juveniles of anadromous species migrate to the ocean during overlapping time periods. Bjornn and Reiser (1991) also identified overlaps in habitat requirements of salmon and steelhead. For example, the temperature range for spawning and incubation of spring/summer chinook salmon is identified as 42°F to 57°F and that for steelhead is 39°F to 49°F. In a review of temperature requirements for steelhead, Barnhart (1991) noted that spawning occurs within a range of 39°F to 55°F with an optimal spawning temperature at 45°F. In general, steelhead have a lower temperature requirement for spawning than do chinook salmon. Similarly, substrate quality that produces optimum spawning for these fish is about 20% fine sediment or less (<6.3 mm).

The spatial distribution of salmon and steelhead are similar in the upper Columbia River and Snake River basins (discussed in the PACFISH EA). Because of similarities in life history and distribution between salmon and steelhead, effects of programmatic direction on steelhead can be inferred from the

March 1, 1995, LRMP Opinion which addressed LRMP effects on salmon from eight National Forests in the Snake River basin. The March 1, 1995, Opinion includes consideration of the status of LRMP and project implementation.

Table 2. Comparison of habitat features with: PACFISH riparian management objectives (RMOs); NMFS March 1, 1995, LRMP Opinion; and, the BA on steelhead based on review of literature cited in the text.

Habitat Feature	RMOs	NMFS' 1995 Opinion	Steelhead BA
Pool frequency	Nine to 96 pools per mile based on stream width	Nine to 96 pools per mile based on stream width (same as RMO)	Nine to 96 pools per mile based on stream width (same as RMO)
Water temperature	No measurable increase in maximum temperature; <64^{O}F in migration and rearing areas & <60^{O}F in spawning areas	No measurable increase in maximum temperature; <64^{O}F in migration and rearing areas & <60^{O}F in spawning areas (same as RMO)	No measurable increase in maximum temperature; <64^{O}F in migration and rearing areas & <45^{O}F in spawning areas
Large woody debris	>20 pieces per mile that are >12 inches diameter and >35 feet long	>20 pieces per mile that are >12 inches diameter and >35 feet long (same as RMO)	>20 pieces per mile that are >12 inches diameter and >35 feet long (same as RMO)
Substrate	None recommended	<20% fine sediment in spawning areas	<20% fine sediment in spawning areas (same as BO)
Stream bank stability	>80%	>90%	>90% (same as BO)
Lower bank angle	>75% banks undercut	>75% banks undercut (same as RMO)	>75% banks undercut (same as RMO)
Width to depth ratio	<10	<10 by channel type	<10 by channel type (same as BO)

VII. Environmental Baseline

Given the substantial overlap in the life histories and distribution of steelhead and chinook salmon within the Snake River and upper Columbia River basins, similar aspects of the environmental baseline conditions are relevant to the survival and recovery of these species. The large proportions of Federal land in these basins and substantial influence of Federal land management activities on the environmental baseline was noted in the BA. The USFS manages about 40% of the upper Columbia River basin ESU and the BLM about one percent; while the USFS manages about 65% of the Snake River basin ESU and BLM about seven percent (Table 3). Baseline conditions are established primarily from three sources of

information in the range of the two ESUs: (1) the 1995 LRMP Opinion summarized baseline conditions information provided in 57 watershed BAs prepared in 1994 and 1995; (2) watershed analyses completed in 1996 and 1997 in the upper Columbia River basin; and (3) the BA described of the types of activities that have occurred in the two basins (with emphasis on the Snake River basin) under the LRMPs over the past two years as an indication of how baseline conditions have been affected.

Table 3. Acreage of ESUs by ownership and category of protection. Acreage is to the nearest 1000 acres from the Interior Columbia Basin Ecosystem Management Project database.

	Evolutionarily Significant Units								
	Upper Columbia River Basin			Snake River Basin					
Unit	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
BLM	7,000	14,000	2,000	24,000	1,125,000	0	1,000	16,000	11,000
Forest Service	359,000	134,000	983,000	2,740,000	6,912,000	78,000	391,000	971,000	104,000
State and Private	876,000	891,000	182,000	1,479,000	920,000	859,000	157,000	1,032,000	337,000
Other Federal	128,000	0	2,000	1,000	0	0	0	0	0
Total Acres	1,370,000	1,039,000	1,169,000	4,244,000	8,957,000	937,000	549,000	2,019,000	452,000
Reserve Allocations	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
Wilderness	73,000	0	317,000	1,283,000	2,420,000	14,000	60,000	177,000	0
Wild & Scenic River	5,000	0	0	85,000	234,000	0	25,000	24,000	1,000
National Recreation Areas	0	0	2	21,000	1,000	0	240,000	21,000	38,000
BLM areas of critical environmental concern	4,000	0	0	4,000	29,000	0	0	60,000	12,000
Consultation Status	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
Chinook salmon consultation on LRMPs	0	0	0	0	6,912,000	78,000	391,000	971,000	104,000
Sockeye salmon consultation on LRMPs	0	0	0	0	1,000 *	0	0	0	0
No FS or BLM consultation on LRMPs	366,000	148,000	984,000	2,764,000	1,125,000	0	1,000	16,000	11,000

*- approximate acreage around Redfish Lake.

A. Review of Environmental Baseline Described in 1995 Opinion

Considering both Federal and non-Federal land, the 1995 LRMP Opinion described salmon habitat conditions throughout the Snake River basin based on information available at that time. The Opinion noted that the sharp decline of salmon production in the action area had resulted from a variety of activities including hydropower, harvest, artificial propagation, and land management activities. Land management activities that contributed to degraded habitat and egg-to-smolt mortality included water withdrawals, unscreened water diversions, small hydropower development, road construction, timber harvest, mining, livestock grazing, outdoor recreation, and associated activities. In general, land management actions that disturb ground and remove vegetation had: (1) Reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) significantly elevated watershed sediment yields, leading to pool filling and elimination of spawning and rearing habitat; (3) reduced or eliminated instream replenishment of large woody debris that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced or eliminated vegetative canopy that minimizes temperature fluctuations; (5) caused streams to become straighter, wider, and shallower, which has the tendency to reduce spawning and rearing habitat and increase temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; (7) altered water tables and base flows, resulting in riparian wetland and stream dewatering; and (8) contributed to degraded water quality by adding toxicants through mining and pest control (Eastside Forests Scientific Society Panel 1994; McIntosh et al. 1994; Rhodes et al. 1994; and Wissmar et al. 1994).

Representative examples of these disturbances were found throughout the Snake River basin. For example, streams in the upper Grande Ronde River subbasin were heavily degraded by livestock grazing, road construction, timber harvest, mining, and stream channelization on private and Federal lands (Anderson et al. 1992; and McIntosh et al. 1994). Ten streams resurveyed in the Grande Ronde River basin showed declines in the frequency of large pools by 20% to 90% over the period 1941-1990, with a total decline of 66% (McIntosh et al. 1994).

Dominant substrate particle size generally decreased in the basin over the same period of time, and large woody debris was scarce in recent surveys of managed watersheds in the basin. Peak flows had shifted to as much as 30 days earlier in the spring.

Similar kinds of habitat perturbations were widely distributed throughout managed watersheds in the Columbia River basin (Chapman et al. 1991; and Rhodes and McCullough 1994). In general, portions of the Salmon River outside designated wilderness areas suffered from habitat degradation. In the areas of timber management, related road construction, and mining, measurable impacts on listed salmon habitat have persisted for decades in the South Fork Salmon River, Panther Creek, and numerous first and second order streams throughout the Snake River basin. Even within designated wilderness, watersheds such as Bear Valley Creek experienced land management impacts which significantly reduced chinook salmon production (Burton et al. 1993).

Federal land management policy has not prevented loss of salmon habitat. The principal ways in which land management policy has contributed to the decline of salmon habitat were: (1) Overemphasis on production of non-fishery commodities, resulting in incremental losses of riparian and fish habitat; (2) failure to take a biologically conservative or risk-aversive approach to planning land management actions when there was inadequate information on the relationship between land management actions and fish habitat; (3) failure to include the best available scientific information in planning of project actions; (4) planning actions on a site-specific basis, rather than based upon broader watershed and river basin conditions and capabilities; and (5) reductions in the number, size, and distribution of remaining high-quality habitat areas (such as roadless and minimally developed areas) that serve as biological refugia for salmon subpopulations (Eastside Forests Scientific Society Panel 1994; FEMAT 1993; Rhodes et al. 1994).

B. Environmental Baseline in the Upper Columbia River Basin

The BA did not describe existing conditions of steelhead habitat in the upper Columbia River basin; however, information on conditions was available from recent watershed analyses. These analyses show variable stream conditions similar to the conditions described in the Snake River basin.

For instance, the lower and middle sections of the Entiat River on the Wenatchee National Forest (WNF) show increased sedimentation and loss of pools over the last 60 years, primarily due to roads and timber harvest. In the Mad River (a tributary of the Entiat River), however, pools have increased approximately 10-fold over the last 60 years, apparently due to recovery from a catastrophic fire in 1888 (USFS 1996). The Chiwawa River, located in the upper Wenatchee River subbasin, has also been impacted by roads, timber harvest, and grazing. Hydrologic regime, sediment yield, wood recruitment, and stream temperature may have been altered to some extent by those activities. Watershed functions, however, remain substantially intact, with good substrate conditions, unconfined channel, and good habitat connectivity (USFS 1997).

On the Okanogan National Forest (ONF), the Chewuch River, a tributary of the Methow River, shows impacts from management activities which have added sediment to the substrate and have reduced large wood recruitment and off-channel habitat for steelhead. Those steelhead habitat elements are not fully functioning primarily because of historic and existing activities in the lower portion of the watershed.

C. Effects of Recent Actions on the Environmental Baseline

The BA did not update the environmental baseline, but includes an overview of actions produced under the LRMPs as an indication of: (1) how environmental conditions have been affected over the last few years, and (2) the potential effects of the continuing action (LRMP implementation) on steelhead. Information was not available on changes in the environmental baseline resulting from the majority of non-Federal land management activities (those not interrelated or interdependent with Federal activities).

Overall, the environmental baseline has not changed appreciably since 1995. Some actions such as salvage sales conducted under the Rescissions Act may have reduced the baseline condition, while other actions have probably resulted in improvements. The amendment or modification of LRMPs with PACFISH, the application of NMFS' 1995 LRMP Opinion guidelines, and the interagency streamlining MOA process have likely reduced the rate of degradation, and allowed some level of natural recovery to occur. The use of PACFISH interim Riparian Habitat Conservation Areas (RHCAs) in timber sales on

Federal lands is expected to maintain nearly 100% of existing stream function (FEMAT 1993), and should not hinder natural recovery of instream conditions in degraded watersheds. Road building in RHCAs on Federal lands also has likely decreased in frequency over the last two years, in accordance with direction in PACFISH and the LRMP Opinion. Implementation of PACFISH and the LRMP Opinion may have also resulted in better constructed roads and avoidance of unstable areas in most instances.

Existing roads, however, continue to affect many streams within the Snake River and upper Columbia River basins. In some areas these effects have been compounded by storm or flood events over the last two years. For example, washouts and failures during fall 1995 and winter 1996 delivered large amounts of sediment into several streams on the Clearwater and Wallowa Whitman National Forests. The USFS has initiated, but not concluded, data collection and analyses to determine the effects of the flood events on substrate condition and other aspects of the environmental baseline (Pat Murphy, fishery biologist, Clearwater National Forest, October 30, 1997, personal communication). In 1997, flood events exacerbated by channelization from the adjacent highway altered substrate conditions in the Little Salmon River, other tributaries of the Salmon River in that area, and the Salmon River itself (Craig Johnson, fishery biologist, BLM Cottonwood Resource Area, October 22, 1997, personal communication).

Land management agencies have accomplished various road mitigation, closure, and obliteration projects over the last two years, but often in association with, or to counterbalance further road construction or reconstruction. Road standards RF-2 and RF-3 in PACFISH describe a comprehensive approach to identifying and repairing or obliterating roads which cause degradation of habitat for listed anadromous fish. Most National Forests and BLM Districts in the Snake River basin have not implemented key portions of these standards: they have not completed transportation plans, have not evaluated the effects of the majority of existing roads on listed species, and have not funded and implemented rehabilitation and obliteration activities accordingly.

Since PACFISH went into effect NMFS has noted a decrease in the number of USFS/BLM actions NMFS found likely to adversely affect (requires formal consultation) the listed species. The BA does point out, however, that several of the formal

consultations were on actions in the South Fork and Middle Fork Salmon River subbasins. This presents a concern because of the high value of those subbasins as strongholds for chinook salmon and steelhead. The BA notes that in spite of direction in the PACFISH amended LRMPs, other laws have made it difficult for USFS and BLM to avoid adverse affects from mining actions, water conveyances, issuance of road use permits enabling a variety of activities on non-Federal lands, and timber salvage under the Rescissions Act timber rider (Section 2001 of Public Law 104-19; enacted July 1995).

Adverse effects on steelhead, chinook salmon, and their habitat have occurred or are occurring from salvage of timber under the provisions of the Rescissions Act. The Rescissions Act expedited the amount of timber harvested under the salvage program. The President directed Federal agencies, including the USFS and BLM, to implement an MOA designed to conduct the salvage sales in an environmentally sound manner. An interagency review of the salvage program, however, found substantial variation in compliance with the MOA (NMFS et al. 1996). The Rescissions Act expired on December 31, 1996.

Within the range of the upper Columbia River and Snake River basin ESUs, the BLM reported 14 salvage timber sales on about 300 acres and the USFS reported 12 salvage timber sales on about 13,500 acres conducted under the Rescissions Act. The BAs and other consultation records for some of these projects show risk of adverse effects from sedimentation, petroleum spills, and reduced wood recruitment within RHCAs. These effects resulted from timber removal in RHCAs, LRMP modifications, and/or amendments that override protective requirements. Examples of salvage timber sales with potential adverse effects on steelhead and salmon include the Thunderbolt, Pony Creek, and Big Flat Creek sales, all of which occurred within the Snake River basin ESU on the Boise and Payette National Forests.

Aspects of the LRMPs themselves contribute to the development of actions that would degrade, or hinder improvement of, baseline conditions. A few examples of these types of actions can be found in NMFS' consultation records since 1995, but many more have been modified during streamlining MOA Level 1 team review to minimize adverse effects. Some of the features of LRMPs which have reduced their effectiveness in improving baseline conditions are listed below.

(1) LRMPs lack a coordinated, clearly defined strategy to conserve anadromous fish species, and do not schedule the development of such a strategy. This type of strategy would include not just the anti-degradation measures outlined in PACFISH, but would also prioritize watersheds based on species' biological requirements and would establish a schedule and actions to be taken to achieve the functioning aspects of those watersheds at appropriate rates.

(2) LRMPs lack direction and methodology to analyze collections of actions within watersheds--usually 5th and 6th field HUC scale--so that combined effects are adequately addressed.

(3) LRMPs lack direction and methodology to determine and track fish habitat conditions related to land management activities at the subbasin scale (3rd and 4th field HUCs).

(4) LRMPs contain goals and standards both for production of goods and services and resource conservation without a clear, coordinated approach to achieving realistic and legally required levels of both.

(5) Goals, objectives, standards, and guidelines in the LRMPs are numerous and open to interpretation, and thus lead to actions varying from no effect to jeopardy to the listed species.

(6) Road rehabilitation and obliteration, measures to reduce impacts on grazing allotments, and other restoration activities have been inadequately planned, funded, and monitored; therefore, the USFS and BLM have been greatly limited in actively improving baseline aquatic conditions over the last three years.

In summary, while the addition of PACFISH to the LRMPs has likely resulted in actions allowing natural recovery processes to take place in many areas, other laws and shortcomings of LRMPs themselves have reduced the effectiveness of LRMPs in avoiding adverse effects on the environmental baseline since 1995. Also, because natural recovery generally takes place over many years or decades, some of the positive effects from improved land management practices on Federal land would not yet be evident. Given those considerations, and assuming that land management practices on non-Federal land in the two basins have not changed substantially over the last two years,

habitat conditions for anadromous fish likely remain much as in 1995. That is, most managed watersheds remain in at-risk or non-functional condition due to the effects of past and present land management activities on one or more key elements of habitat for listed anadromous fish species.

VIII. Effects of the Continuing Actions

Effects of the LRMPs differ fundamentally in portions of the Snake River and Columbia River basins. The Snake River basin ESU is managed under PACFISH and streamlining MOA procedures designed for listed chinook and sockeye salmon. The upper Columbia River basin ESU is managed partly under PACFISH and partly under the NFP (in accordance with the streamlining MOA); anadromous fish were not listed in this basin prior to the listing of steelhead. The BA provided information on the effects of the LRMPs primarily in the Snake River basin and in the portion of the upper Columbia River basin managed under PACFISH. The discussion of effects in the BA is summarized in Appendix 3 of this Opinion.

A. Effects of Snake River Basin LRMPs

Listed salmon and steelhead and their habitat may be adversely affected when project design does not adhere to the protective criteria in PACFISH and the 1995 LRMP Opinion. For example, over the last three years, several timber sales and other actions involving road construction have been planned in priority watersheds (established through the 1995 LRMP Opinion Guidelines) where substrate conditions were already degraded by past and ongoing impacts. These activities would exacerbate sediment problems, hinder attainment of the sediment RMO[3], and reduce the quality and quantity of critical habitat for listed anadromous fish. Also, several grazing actions presented to streamlining MOA Level 1 teams[4] did not comport with plan-level direction, in that the allotments were either not monitored or had already shown grazing impacts which are not addressed with corrective measures. Grazing

[3]The 1995 LRMP Opinion establishes a sediment RMO for priority watersheds.

[4]Level 1 teams consist of land management agency and regulatory agency technical staff for each management unit who jointly review and conduct section 7 consultation on land management unit actions. These teams were created under the May 31, 1995, Consultation Streamlining MOA and are guided by that MOA, which was most recently updated February 26, 1997.

impacts on riparian areas and streams may reduce reproductive success and survival of anadromous fish via pathways summarized in Platts (1991). Other types of activities, most notably mining and road use actions, also are not consistently brought into compliance with plan-level direction at the project planning phase. Adjustment of projects to minimize and avoid adverse effects is not occurring at the appropriate planning level and is often left to the streamlining MOA teams.

Nine recommendations (see Appendix 1) were proposed in the September 16, 1997, BA to address inadequacies in existing plan-level direction and thus provide greater assurance that projects would be planned to avoid or minimize adverse effects on steelhead and their habitat. The BA addressed steelhead; however, several of the recommendations would also apply to salmon in the Snake River basin. Although the BA addresses only steelhead, the BA transmittal letter expands this by describing how USFS and BLM propose to use the recommendations for all listed species. (An October 28, 1997, BA supplement was provided by USFS and BLM to specifically address effects on Snake River salmon.) The BA transmittal letter further directs National Forests and BLM Districts to have streamlining MOA Level 1 teams use the recommendations as part of the project decision process at a watershed and site-specific level. The recommendations will be implemented through Environmental Assessments (EAs), BAs, and section 7 consultations at the project-specific level.

In this Opinion, NMFS assumes the proposed plan-level direction (LRMPs amended or modified by PACFISH, and with the nine recommendations in the BA) will remain in place indefinitely as a transitional strategy between PACFISH and long-term management direction provided in the Interior Columbia basin Ecosystem Management Project (ICBEMP). The NMFS reviewed the management agencies' nine recommendations to determine if they sufficiently adjust plan-level direction to ensure that actions produced under the LRMPs avoid or minimize adverse effects on the listed species and designated critical habitat. The recommendations generally target NMFS main concerns; however, several recommendations lack a refined framework to ensure that implementation would avoid or minimize adverse effects. Also, the BA recommendations, while providing measures to strengthen the short-term strategy (LRMPs amended or modified by PACFISH), did not address deficiencies of PACFISH as a long-term strategy.

The proposed plan-level direction could result in actions which adversely affect listed species and designated critical habitat as a result of three elements listed below.

(1) **Accountability/Authority**: Level 1 teams lack the authority to ensure the recommendations (and other plan-level direction) are implemented, and no other mechanism is identified to ensure implementation.

(2) **Implementation of Specific PACFISH Standards**: Critical aspects of existing plan-level direction which have not been fully implemented are still not clearly scheduled for implementation.

(3) **Extended Application of Plan-Level Direction**: PACFISH lacks certain elements of a long-term strategy such as multi-scale inventory, analysis, planning, and prioritization to address anadromous fish concerns; therefore, PACFISH involves increased risk to the listed species the longer its timeframe is extended.

Through consultation, biologists, policy experts, and executives of the USFS, BLM, and NMFS jointly developed five mechanisms to correct these deficiencies and avoid jeopardizing listed species or adversely modifying designated critical habitat. Areas of deficiency in existing plan-level direction, and the mechanisms to address these are described in the three sections below. Deficiencies described in sections 1 and 2 are addressed by mechanisms 1 and 2, respectively. Deficiencies described in section 3 are addressed by mechanisms 3, 4, and 5. The complete list of numbered mechanisms (and subelements for each mechanism) is found in Appendix 2. In the text below, these mechanisms are not numbered; instead, the relevant mechanism is summarized at the end of each section of effects discussion to show how specific deficiencies in plan-level direction were addressed.

1. Accountability/Authority

The nine recommendations would be implemented through the streamlining MOA at the project level. The streamlining process is intended to ensure that: (1) plan-level direction is incorporated into project design prior to consultation on

specific actions; and (2) specific actions planned under LRMPs do not jeopardize the species or result in the destruction or adverse modification of designated critical habitat.

The NMFS has two main concerns with using the streamlining MOA process and project-specific consultation as the single means for implementing the BA recommendations. First, existing plan-level direction (PACFISH and the LRMP Opinion) has not been consistently followed; this underlying problem is not solved by additional plan-level direction. Second, some of the recommendations are beyond the authority of Level 1 teams and individual project planning units to implement. These implementation problems are discussed in more detail in Appendix 4.

Up to this time, direction and funding for PACFISH implementation usually has not been included in management units' budgets for timber, minerals, range, and other programs, and line officers generally view the 1995 LRMP Opinion Guidelines as optional; thus implementation of protective measures in PACFISH has not been ensured by the process employed during the last few years. Implementation of the nine recommendations and other plan-level direction may be improved if a renewed commitment is made at the appropriate level of authority, and a mechanism is developed to ensure proper implementation.

The measures listed below have been developed jointly by the USFS, BLM, and NMFS to assure this renewed commitment is made, interagency expectations are understood, and the measures are effectively implemented.

The USFS and BLM shall develop a mechanism for accountability and oversight to ensure PACFISH direction, directions in the LRMP Opinions, and the BA recommendations (pp 20-24) are fully implemented through a mechanism in addition to Level 1 teams. Interagency collaboration is necessary to ensure a common understanding of expectations.

a. Implement a process, (within 120 days of signature), that ensures full implementation of programmatic aquatic conservation measures at all organizational levels within the Snake River and upper Columbia River ESUs covered by PACFISH.

b. Establish priority watersheds (within 60 days of signature) for steelhead in order to extend PACFISH direction to steelhead watersheds (Recommendation 1 in the BA) that are not presently designated as priority watersheds for salmon.

c. Annually (no later than March 1 of each fiscal year), at the USFS Regional/BLM State level and the USFS Forest/BLM District level review the fiscal year program of work for attainment of fish conservation measures. The action agencies and NMFS will mutually agree on the priority of these actions and identify significant shortfalls in funding or staffing, and potential adjustment(s) in management activities. Mutually develop and implement a strategy if funding or priorities prevent full implementation of the aquatic conservation measures.

d. Implement monitoring commensurate with the level of on-the-ground activities, and provide NMFS feedback on the effects of activities.

1) Review NMFS' expectations for monitoring in the 1995 LRMP Opinion (section IX.I. and Appendix A-10), when updating the PACFISH monitoring strategy.

2) Activate the PACFISH interagency monitoring subgroup to develop a monitoring strategy including a range of monitoring alternatives commensurate with anticipated land management activity levels, funding, and staffing levels.

3) Improve implementation of PACFISH (e.g. expand regional/state level USFS/BLM line officer involvement in PACFISH implementation oversight and review process, etc.).

2. Implementation of Specific PACFISH Standards

The BA highlighted specific shortcomings in the interpretation and implementation of plan-level direction which have resulted in, and could continue to result in projects which adversely affect listed steelhead and salmon and designated critical habitat. The BA noted, for instance, that insufficient minimization and avoidance of adverse effects can result from: lack of watershed analyses, lack of restoration of anadromous

fish habitat, lack of oversight of floatboating, and limitations in USFS/BLM authority over certain actions such as mining, salvage logging, and special use permit activities. The BA addressed these problems with specific recommendations, and also applied broad recommendations (recommendations 1 and 7) to expand and improve on implementation of plan-level direction. The NMFS found, as noted above, that a mechanism needed to be developed to ensure the recommendations will be implemented. The NMFS also found that specific aspects of existing plan-level direction which have not been well implemented should be highlighted to ensure they are addressed by any new implementation strategy. Key areas of existing plan-level direction which are not yet fulfilled include: 1) PACFISH grazing standards and monitoring, and 2) PACFISH road standards. Each of these areas is discussed below, including the mechanism and subelements developed by the agencies to address the concerns raised by prior inconsistent application of PACFISH standards.

a. Grazing Standards and Monitoring

The PACFISH standard GM-1 requires modification of grazing practices which retard attainment of RMOs or adversely affect listed anadromous fish. The standard further requires the suspension of grazing practices which are not effective in meeting RMOs and avoiding adverse effects. Level 1 teams have found that, in keeping with GM-1, measures have been taken on numerous allotments to reduce impacts on riparian areas and streams, and to eliminate access by livestock to spawning salmon and redds. Also, in response to PACFISH, range monitoring was expanded on many allotments to include streambank stability and other measurements related to PACFISH RMOs. The teams have found, however, that coinciding with substantial budget reductions in range programs over the past two years, many allotments are not being monitored, or are monitored at such low intensity that the effects of grazing along the vast majority of stream reaches are unknown.

Numerous symposia and publications have documented detrimental effects from livestock grazing on riparian vegetation, streambanks, and instream conditions (Johnson et al. 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kaufmann and Kruger 1984; Clary and Webster 1989; Gresswell et al. 1989; Kinch 1989; Minshall et al. 1989; and Chaney et al. 1990.) These publications

describe a series of synergistic effects that can occur when cattle overgraze riparian areas. Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated; trampling by livestock causes streambanks to collapse; without vegetation to slow water velocities, hold the soil, and retain moisture, floods cause more erosion of streambanks; the stream becomes wider and shallower and in some cases downcut; the water table drops; and hydric, deeply rooted herbaceous vegetation dies out and becomes replaced by upland species with shallower roots and less ability to bind the soil. The resulting change in streamflow regime, increased summer water temperature, loss of pools and habitat adjacent to streambanks, and increased sedimentation of stream substrate adversely affect listed steelhead and salmon and their habitat.

Given the potential for adverse effects from grazing, management units have focused available monitoring efforts on areas sensitive to disturbance (such as riparian areas along low gradient Rosgen C- and E-type channels) which are adjacent to or upstream from habitat for anadromous fish. Many such areas, however, are not monitored, which would enable adverse effects from grazing to go undetected and uncorrected. The PACFISH Implementation Team noted, for instance, that effects on RMOs from grazing allotments on the Umatilla National Forest were not being monitored. Also, where monitoring is showing physical impacts which may have chronic adverse effects on fish habitat, corrective measures are not consistently taken. For instance, streambank disturbance standards set by the Nez Perce National Forest have been exceeded on several allotments, and yet grazing strategies remain essentially unchanged on those allotments (1996 Nez Perce National Forest Section 7 Monitoring Report).

Management units in the basin have explored various grazing strategies and monitoring techniques, but have lacked a coordinated approach to gain consistency and distribute efforts and funding appropriately. The PACFISH and the 1995 LRMP Opinion established general guidelines for implementation and effectiveness monitoring of range and other programs. The monitoring was to have been coordinated by a monitoring subcommittee, but that group has not been active for the last two years. If a similar interagency committee with range and fisheries expertise were re-activated, this would help assure

that scientifically sound monitoring and appropriate adjustments in grazing were being made to achieve broad compliance with PACFISH grazing standards. The USFS, BLM, and NMFS developed the mechanism listed below to gain this assurance.

The USFS and BLM shall complete prior commitments in PACFISH, LRMPs and this Opinion to meet the direction in the BA recommendation 7. The USFS and BLM shall use the findings from the PACFISH reviews, the BA, and this Opinion to develop solutions. Completing prior commitments includes improving the implementation of PACFISH grazing standards. The USFS and BLM shall improve and monitor grazing strategies to meet PACFISH standard GM-1. Adaptive management information is generally lacking to determine if grazing strategies are meeting PACFISH RMOs.

1) Through interagency coordination develop (e.g., at the watershed or subbasin scales), prior to the 1999 field season, stratified monitoring plans. Stratification should be based on grazing intensity and potential for adverse effects to listed chinook salmon, steelhead, and designated critical habitat. Develop these plans by subbasin to maximize the utility of monitoring information through a coordinated effort and a defensible sampling design. These plans shall be developed by an interagency group (such as the PACFISH Implementation Team, Monitoring Subgroup). The interagency group should establish objectives for the monitoring plans in accordance with PACFISH. Goals for the plans should include maximizing the effectiveness of limited monitoring funds, identifying appropriate scales and levels of monitoring necessary to determine if allotments are meeting PACFISH direction, allowing for flexibility as funding and activities change, and identifying how monitoring results should be used to make management adjustments.

2) Monitoring plans developed per item 1, above, will be fully implemented in 1999. Full implementation means that monitoring schedules will be developed and implemented beginning in the 1999 grazing season. This requirement applies to ongoing as well as new range activities. If monitoring schedules cannot be followed, an alternative monitoring approach will be developed and subject to approval by the interagency

teams outlined in items a and d of the Accountability/Authority mechanism described above. If an alternative monitoring approach is not agreed to in a timely fashion, the matter will be elevated for executive resolution. Until interagency agreement is reached on the alternative monitoring plan, grazing would only be permitted that has been determined by the appropriate Level 1 team to be not likely to adversely affect listed species or designated critical habitat.

b. Road Standards

The PACFISH road standards RF-2 and RF-3 establish requirements that road management plans be initiated, that the effect of each existing road on the attainment of RMOs be determined, and that road obliteration or rehabilitation be completed as necessary to avoid or minimize those effects. Management units in the basin have not completed these requirements, although a few individual districts have made substantial progress. The recent National Forest Transportation System rulemaking (36 CFR Part 212) is also designed to begin addressing existing impacts from roads. The extent to which the requirements of regional plans such as PACFISH will be carried through in the national policy, and the time needed to develop the protocol to implement the policy are unknown.

Roads have been, and continue to be a primary source of sediment impacts on developed watersheds (Furniss et al. 1991; FEMAT 1993; Quigley and Arbelbide 1997; and McClelland et al. 1997). Roads may have unavoidable harmful effects on streams, no matter how well they are located, designed or maintained. Roads modify natural hillslope drainage networks and accelerate surface and mass erosion processes. These changes can alter physical processes in streams, leading to changes in stream flow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition, and stability of slopes adjacent to streams. Studies in Idaho indicate that, without exception, road construction accelerates surface erosion rates compared to undisturbed conditions (Megahan 1987). According to these studies, sedimentation increases greatly during and after road construction, and then decreases rapidly. However, surface erosion rates and sedimentation generally continue to exceed undisturbed conditions. Also, existence of roads on steep and unstable landtypes, even when constructed with current Best

Management Practices, appears to substantially increase the frequency and magnitude of landslides, and thus periodically adds large volumes of sediment to streams (McClelland et al. 1997).

Thus, roads adversely affect essential spawning and juvenile rearing elements of Snake River steelhead and salmon habitat by increasing erosion and sediment transport into streams. Fine sediment degrades salmonid spawning and rearing habitat (Chapman and McLeod 1987; and Bjornn and Reiser 1991). Specifically, high sediment levels can impair habitat for spawning, rearing, and over-wintering steelhead and salmon by:

1) trapping fry in redds when they are attempting to emerge;

2) depleting intergravel oxygen levels in redds, smothering eggs contained within;

3) limiting aquatic invertebrate populations used as a food source by rearing juvenile steelhead and salmon;

4) filling and thereby reducing the number of large pools which serve as primary feeding and resting areas for juvenile steelhead and salmon; and,

5) filling interstices that serve as over-wintering refugia for juvenile salmon.

Substantial progress in minimizing these effects can be made if the measures developed to fulfill BA recommendation 7 (improved implementation of PACFISH) include clear direction to complete PACFISH standards RF-2 and RF-3 as soon as possible. The USFS, BLM, and NMFS developed the subelements listed below to ensure PACFISH standards RF-2 and RF-3 are implemented.

Implementation of the existing standards in PACFISH for evaluating and planning roads (PACFISH standards RF-2 and RF-3) is necessary to understand and begin reducing impacts from roads on streams with habitat for ESA listed and proposed fish. The items below are the minimum required to fully implement PACFISH RF-2 and RF-3 in a timely manner.

1) Using existing information, provide NMFS with road inventories on the management units in the areas of the

five ESUs within 120 days of the signature of this Opinion. This information should include a description of road definitions and survey methodology used. Missing information will be provided to NMFS within two years after signature of this Opinion.

2) Collaborate with NMFS (and FWS if possible) in developing multi-year road restoration strategies for priority watersheds. Restoration strategies will identify key processes needing attention, prioritize key locations and project types, address implementation and scheduling issues, and provide preliminary cost estimates. Subbasin assessments and watershed analyses will be the primary process for integrating and interpreting amended road information, inventories, and other potential information.

3) Annually update the road inventories, including a reconnaissance protocol for identifying, recording, and prioritizing new problems as they arise.

3. Extended Application of Plan-Level Direction

The BA noted that adverse effects could result not only from the inconsistent implementation of plan-level direction, but also from the inherent shortcomings of that direction. PACFISH was designed to be a short-term strategy to arrest degradation of salmon habitat over an 18-month period while a more complete strategy could be developed. PACFISH has now extended for three years, and will be in use at least another year and a half. The long-term strategy (ICBEMP) intended to replace PACFISH has experienced repeated delays, and may continue to be delayed. The strength of PACFISH is in its prescriptive standards designed to halt degradation, particularly in riparian areas. PACFISH does not, however, contain fundamental elements of a longer-term approach, such as a restoration plan or a plan for completing broad-scale analyses on which specific aquatic conservation strategies would be based.

Several BA recommendations expand components of the PACFISH strategy that were limited in scope due to its intended implementation period of 18 months. Also, recent initiatives such as NMFS' Effects Matrix, the USFS proposed Roadless

Policy, and the outcomes of the ongoing subbasin review prototypes will augment inherent shortcomings in the short-term design of PACFISH.

The BA proposed to address critical shortcomings of PACFISH and thereby strengthen plan-level direction and minimize adverse effects during this extended period. In particular, BA recommendations 4, 5, and 7 involve (respectively): prioritization of subbasins for special management, accelerating restoration of anadromous fish habitat, and increased implementation of watershed analyses.

In addition to those measures in the BA, other efforts are underway which can help strengthen the scientific basis for, and efficiency of NMFS' concurrence with individual projects over the longer term. These efforts include: 1) evaluating effects of groups of actions by watershed using NMFS' Effects Matrix; 2) the recent Forest Development Transportation System rulemaking (36 CFR part 212) proposing a moratorium on, and analysis requirements for road construction in roadless areas; and 3) the completion of the ICBEMP Science Team Report (Quigley and Arbelbide 1997) and planning of prototype subbasin reviews for the development of ICBEMP. While these other efforts are not part of the proposed action, they are relevant to the analysis of effects because they may combine with the proposed action to influence or direct project planning. The USFS, BLM, and NMFS also, through this consultation, developed mechanisms and subelements which address those three items, because the action agencies have not fully completed previous commitments related to those items[5].

In the discussion below, NMFS considers six key aspects of plan-level or related direction where improvements are proposed or already underway which should result in projects more consistently compatible with the survival and recovery of the listed anadromous fish species. These are considered key outstanding items needed to ensure that PACFISH-amended LRMPs sufficiently protect the listed species and designated critical habitat during the extended period for which PACFISH would apply:

[5] The mechanisms are designed to fulfill prior commitments made by USFS and BLM in the 1992 Interagency Agreement, 1995 LRMP Opinion, October 8, 1996, PACFISH extension letter, and ICBEMP Implementation Team's prototype subbasin review schedule.

a) Prioritization of subbasins for special management;
b) Accelerating restoration of anadromous fish habitat;
c) Increased implementation of watershed analysis;
d) Grouping projects by watershed;
e) Unroaded areas; and
f) Subbasin review/assessment.

At the end of each section of discussion of effects related to these items, NMFS describes the relevant mechanisms and subelements (portions of mechanisms 3, 4, and 5 from Appendix 2) developed by the action agencies and NMFS to reduce the potential for adverse effects on listed species and designated critical habitat. Subelements of the mechanisms were discussed and where possible agreed to through an interagency effort.

a. Prioritization of Subbasins for Special Management

PACFISH did not attempt to stratify watersheds for different types of management strategies based on watershed importance for listed anadromous fish species. The 1995 LRMP Opinion initiated establishment of priority watersheds for spring/summer chinook salmon and application of special management criteria for projects in those watersheds. Recommendation 1 of the BA would extend the watershed prioritization to areas not covered in the salmon consultation and also would update the prioritization where the ranges of salmon and steelhead overlap. Prioritization of watersheds based their importance to listed anadromous fish species, enables a stratified approach to planning of activities and restoration projects to increase management effectiveness for the survival and recovery of those species. Identification of priority watersheds is underway for the Clearwater River, and appears to be based on a scientifically sound process which will allow for updating as new information becomes available. The process being used for the Clearwater River should provide a good model for other management units to follow in extending and updating priority watersheds for listed steelhead and spring/summer chinook salmon.

Recommendation 4 of the BA creates an additional prioritization, designating steelhead stronghold subbasins, where specific criteria for management and restoration are to be used in developing projects. The Middle Fork Salmon River, South Fork Salmon River, and Selway River subbasins were selected as important strongholds for genetically unique

steelhead populations. Because these three rivers are priority subbasins, the priority watershed guidelines identified in the 1995 Opinion and in BA recommendation 4 would apply. Some of the key special management measures for these subbasins are:

(1) developing a schedule and accomplishing reductions in road mileage;

(2) restricting the construction of new roads;

(3) using specific techniques to identify, and avoid activities on landslide prone areas;

(4) minimizing ground disturbance in fire suppression;

(5) maximizing the use of prescribed natural fire in vegetation management;

(6) minimizing road construction and other ground disturbance in harvesting timber;

(7) managing grazing allotments to achieve natural streambank stability; and,

(8) managing recreation to use existing roads and trails, and to close streams or reaches to boating and floating where disturbance of spawning steelhead is likely.

These measures are designed to address the agencies' inconsistent implementation of PACFISH over the last few years to plan low risk projects and progress toward restoration objectives, particularly in the Middle Fork Salmon River and South Fork Salmon River subbasins. The measures would be used as added direction to the streamlining MOA process, and should thereby reduce the occurrence of projects with adverse effects and foster implementation of restoration projects in those subbasins. To ensure that other subbasins will also be considered for these special management measures, the USFS, BLM, and NMFS clarified the implementation of recommendation 4 as described in the paragraph below.

In the event that ICBEMP may not be implemented by the year 2000 field season, it will be necessary to have an alternative long-term strategy in place for the conservation of anadromous fish. As part of developing that strategy, the USFS and BLM

shall coordinate with NMFS by December 15, 1999, to initiate a review of the Upper Columbia River and Snake River basins. The products of this review shall include: a) Delineated migration corridors, metapopulations, and subpopulations of listed salmon and steelhead; b) Subbasin priorities for further review based on importance for, and level of threat to listed species and critical habitat from continuing management activities; and c) Determination if other subbasins warrant the precautionary measures established for the Selway River, South Fork Salmon River, and Middle Fork Salmon River subbasins (BA recommendation #4). If a determination is made that other subbasins warrant further protection, a strategy to provide the necessary protection will be developed within six months of completion of the basin review.

b. Accelerating Restoration of Anadromous Fish Habitat

PACFISH established standards to direct restoration projects, but
did not schedule or fund restoration. The BA notes that the LRMPs contain schedules established prior to PACFISH for restoration of anadromous fish habitat, but that little progress has been made to meet these schedules on National Forests in the Snake River basin under PACFISH.

The lack of implementation of restoration projects, particularly riparian protection and road reduction projects, allows the environmental baseline to continue to degrade the status of listed species and hinder recovery of their designated critical habitat. While PACFISH does not establish restoration schedules, it does emphasize planning projects to not retard or prevent natural restoration processes from occurring. The majority of projects appear to have met this standard; however, several grazing allotments, timber sales, mines, and special use permits have not, as documented in formal consultations in the Snake River basin. The BA notes the difficulties presented by attempting to avoid adverse affects where Federal requirements under ESA do not mesh well with requirements of other laws such as the 1872 mining law, Alaska National Interest Lands Conservation Act (ANILCA), state water laws, and the Rescissions Act. Grazing, on the other hand, is not influenced by these other laws, and yet the

LRMPs have not consistently produced grazing proposals which clearly enable natural or near natural recovery rates of streambanks and riparian vegetation. Improved implementation of PACFISH grazing standards (discussed above) should help maintain natural restoration processes.

Recommendation 5 goes a step beyond the PACFISH approach of merely not hindering natural restoration processes. Recommendation 5 states simply that restoration will be accelerated in the Snake River basin. The recommendation did not describe what steps would be taken to accelerate restoration. Those steps should include a basis for prioritizing restoration in areas where the greatest gains can be made for listed species, and should include a schedule for the restoration projects. Restoration activities would have high priority in the stronghold subbasins, per recommendation 4 (prioritization of subbasins for special management), but should not be limited to those subbasins. Analyses for ICBEMP suggest that restoration and maintenance of a few high quality areas with stable fish production is more likely to sustain salmon survival than a large number of areas of moderate quality (Quigley and Arbelbide 1997). Limited funds should be focused first on those watersheds that represent the best opportunity to maintain or restore high quality fish production areas.

The implementation of road rehabilitation, closure, and obliteration projects under improved implementation of PACFISH road standard RF-3 (discussed above) should provide a key component of accelerating restoration. It will also be important for USFS and BLM to continue to adhere to PACFISH restoration standards, particularly WR-3, which requires that planned restoration not be used as a substitute for preventing habitat degradation. The interagency Level 1 teams found that in a few instances, particularly where USFS and BLM have competing legal requirements (1872 Mining Law, ANILCA, state water laws, etc.) that sometimes conflict with ESA, adverse effects cannot be avoided. In those instances, restoration projects may be the only option to counterbalance adverse effects from proposed activities and maintain progress toward RMOs. In those situations, USFS and BLM may be able to shift the responsibility to applicants for funding those counterbalancing projects, and allow the USFS and BLM to keep

other important restoration projects on schedule. The USFS, BLM, and NMFS developed additional description, provided in the paragraph below, to clarify what is required to implement recommendation 5.

By March 1, 1999, the USFS and BLM shall develop, in cooperation with NMFS, multi-year strategies to accelerate restoration of habitat for listed anadromous fish in the Snake and Upper Columbia River basins. These multi-year/multi-scale restoration strategies are intended to be dynamic documents modified annually to reflect priorities and opportunities determined through watershed analyses. These strategies should include project-specific information; however, they will be developed at the watershed, subbasin, or basin scales. These strategies should incorporate road restoration information identified above. These strategies should serve as the source for implementing restoration projects in the 1999 and subsequent annual field seasons.

c. Increased Implementation of Watershed Analysis

Watershed analysis has not been emphasized under PACFISH. PACFISH established an objective of completing four or five watershed analyses within the Snake River basin during the 18-month period PACFISH was to be in place. PACFISH and the 1995 LRMP Opinion did, however, establish criteria which trigger watershed analysis. Several watershed analyses have been produced, for instance, because the USFS had planned projects involving road construction in RHCAs, a trigger for watershed analysis under PACFISH. The watershed analyses in the Snake River basin have thus tended to be project-driven, rather than undertaken to create an information base from which projects are subsequently planned.

Recommendation 7 places increased emphasis on watershed analysis as a basis for planning actions. The recommendation also calls for development of a schedule for each management unit to complete the analyses in a timely manner. Watershed analyses would continue to adhere to the 1995 Federal Guide for Watershed Analysis, and thus should provide a useful compilation and analysis of existing data. Watershed analysis would add to project planners' and Level 1 teams' abilities to understand what activities are appropriate in a watershed to maintain functioning conditions and enable improvement of at-risk or non-functioning conditions of habitat for anadromous

fish. When watershed analyses are completed, the results should be a primary factor directing management of the watershed; and this should increase USFS and BLM managers' ability to plan projects which avoid or minimize adverse effects on steelhead, salmon, and their habitat. The USFS, BLM, and NMFS developed additional description, provided in the paragraph below, to clarify the implementation of the watershed analysis component of recommendation 7.

Strengthened implementation of PACFISH, including increased emphasis on completing subbasin and watershed analyses. Within 90 days following the issuance of this opinion, the USFS and BLM shall submit to NMFS a schedule for the completion of at least one watershed analysis per management unit per year beginning in 1999 and each year thereafter. The analyses shall follow the protocol in the 1995 Federal Guide for Watershed Analysis and any updates to that Guide. This action will be coordinated with actions identified in the Accountability/Authority mechanism above.

d. Grouping Projects by Watershed

Shortly after Snake River salmon were listed, NMFS, USFS, and BLM agreed to a consultation process which included batching projects by watershed (March 6, 1992, interagency agreement). The agencies found project batching necessary to understand combined effects of projects and to verify that needed improvements in environmental baseline conditions would likely occur. Following this agreement, during 1993 through early 1995, BAs were submitted including all actions within 4th or 5th field HUC watersheds. Under PACFISH and the streamlining MOA, however, consultations have been conducted almost entirely on a project-by project basis. The Level 1 teams and project planners thus have had limited ability to track changes in baseline conditions and understand combined effects of projects. This limited understanding can in turn add up to broad-scale adverse effects that action agencies and NMFS do not consider at the project scale.

The BA does not address this issue directly, but does mention (in recommendation 3) a technique which may be used to revive the watershed approach to consultation. Recommendation 3 of the BA includes specific guidelines for screening ongoing actions for effects on steelhead using NMFS' "Matrix of Pathways and Indicators" (NMFS 1996). The matrix has been

applied effectively in consultations on National Forests and BLM Districts covered by the NFP. The matrix provides tools for tracking environmental baseline conditions and evaluating the effects of actions in a consistent manner. These tools also allow analysis of groups of actions in a watershed, and enable accounting of specific elements of fish habitat conditions in the watershed. Recommendation 3 mentions use of the matrix only for ongoing actions; but the matrix might also be applied to proposed actions. The matrix could give line officers, project planners, and Level 1 teams improved understanding of baseline conditions and effects from single and multiple actions. The USFS, BLM, and NMFS developed the specific requirements described below to revive the approach of consulting on batches of projects by watershed.

The USFS and BLM will conduct biannual programmatic reviews and/or project bundling by watershed or subbasin. Field managers working with the Level 1 teams will programmatically review actions or bundled projects at least every two years. Programmatic reviews and project bundling will enable managers to better evaluate overall risks to listed and proposed fish and their important habitats on a broader range of activities, and provide the crucial ability to step-back from the project-by-project evaluations that now dominate the system.

By January 15, 1999, the USFS and BLM will group, analyze, and submit (by watershed) activities proposed for FY 1999 and 2000 and biannually thereafter. This shall be accomplished at least as fine a scale as section 7 watersheds (as per commitment in the March 1992, Interagency Agreement) already delineated for Snake River salmon and wherever possible coordinated with USFWS bull trout delineated watersheds. To meet this commitment, section 7 watersheds will be delineated for the upper Columbia River basin ESU. Individual projects may be considered on a case-by-case only to meet unforeseen program and public needs.

Whenever possible, watershed-scale or subbasin evaluations should be tied together with the unroaded area analysis identified below.

e. Unroaded Areas

A widely held principle of managing for the survival and recovery of threatened and endangered aquatic species is that

remaining stronghold areas for the species and high quality habitats be preserved and reconnected. Wilderness, unroaded, and large blocks of primitive lands contain most of the best available remaining habitat for steelhead and salmon (Frissell 1993; Thomas et al. 1993; Eastside Forests Scientific Society Panel 1994; Rhodes et al. 1994; and Quigley and Arbelbide 1997). Management policy has contributed to the decline of steelhead and salmon by reducing the number, size, and distribution of these remaining high quality habitat areas that serve as biological refugia for steelhead and salmon subpopulations (Eastside Forests Scientific Society Panel 1994; FEMAT 1993; and Rhodes et al. 1994). For example, in impacted portions of Bear Valley Creek, Idaho, chinook salmon populations have declined compared to unimpacted Middle Fork Salmon River tributaries (Rich et al. 1992). Similar comparisons were made in coastal Oregon, Washington, and California where primitive areas were shown to retain the best habitat and strongest fish populations (FEMAT 1993). Eastside streams impacted by logging, grazing, and mining have lost 50% to 75% of their large pools since the 1940s, while the number and quality of large pools in comparable streams in less-developed (wilderness or primitive) areas has changed little (Sedell and Everest 1991; and McIntosh et al. 1994). These large pools serve as important holding areas for adult chinook salmon and rearing areas for juvenile chinook salmon.

Many unroaded areas are steep, unstable, high elevation lands where road construction is likely to increase mass failure rates, erosion, and sediment yield, thereby degrading some of the best habitat remaining for salmon. These areas also moderate flow regimes and deliver high quality, low temperature water and organic and inorganic materials at natural rates to downstream habitats. Many of these undeveloped areas now serve as habitat and species strongholds from which steelhead and salmon could re-colonize other areas as habitats recover.

In the 1995 LRMP Opinion (p. 81-82), one of the guidelines prescribed by NMFS was an inventory of unroaded areas greater than 1000 acres in priority watersheds. The inventory was needed to identify specific areas of high quality habitat and high quality water sources for listed salmon where management activities should be carefully evaluated. The NMFS Opinion also noted that any road construction planned in the unroaded areas should have: 1) *de minimis* risk of degrading the

functions and values of those areas; and 2) supporting analysis for the *de minimis* risk finding which includes addressing impacts of road construction on ecological goals and objectives, RMOs, salmon, and their designated critical habitat. Since 1995, the need for this information has increased, as USFS has proposed several actions which include road construction in unroaded and Roadless Area Review and Evaluation (RARE II) Roadless areas. The proposals include Mackey Day and Mallard Timber Sales on the Nez Perce National Forest; Buzzard Timber Sale on the Umatilla National Forest; White Sand Timber Sale on the Clearwater National Forest; timber sales in the Little Salmon River watershed on the Payette National Forest; salvage timber sales under the Rescissions Act; and others.

While the BA did require adherence to the 1995 LRMP Opinion, it did not explicitly provide for the inventory, analysis, and cautious approach to the development of unroaded areas that was required in the LRMP Opinion and not substantively implemented by the USFS. Without this information, USFS and BLM would not know if any proposal to develop unroaded areas would degrade critical areas for the survival and recovery of the species. Therefore, proceeding with road construction in unroaded areas without the necessary inventories and analyses could jeopardize the continued existence of the species or result in destruction/adverse modification of designated critical habitat.

While the BA did not provide a strategy for unroaded areas, USFS, BLM, and NMFS staff and executives discussed and developed a joint approach to assessing the importance of, and protecting these areas for the survival and recovery of the listed anadromous fish species. Further, the USFS has developed concurrently with this consultation a proposed national roads policy (Forest Development Transportation System rulemaking; 36 CFR Part 212) designed to address the issues of unroaded areas and the effects of existing roads. This interim rule would suspend road construction in the following categories of unroaded areas for a period of 18 months, or until inventories and analyses of the unroaded areas (to be developed through the rule) can be completed:

1) unroaded areas of 5000 acres or more inventoried in RARE II;

2) other unroaded areas, regardless of size, identified in an LRMP;

3) unroaded areas greater than 1000 acres contiguous to Congressionally-designated Wilderness or contiguous to Federally administered components of the National Wild and Scenic Rivers System that are classified as “Wild;”

4) all unroaded areas greater than 1000 acres contiguous to roadless areas of 5000 acres or more on other Federal lands; and

5) any National Forest System (NFS) area of low density road development or any other NFS area that retains its roadless characteristics which the Regional Forester subsequently determines has such special and unique ecological characteristics or social values that no road construction or reconstruction should proceed.

The proposed rule states that it is expected that the Regional Foresters will apply this last item on a project-by-project basis. The rule also states that the last item could include areas needed to provide habitat for listed species.

This proposed rule would strongly reinforce the cautious, analysis-based approach to unroaded areas outlined in NMFS’ 1995 LRMP Opinion. The specifics of the inventories and analyses for the national application of the rule have yet to be developed; however, for this consultation, the USFS, BLM, and NMFS have developed specific requirements for unroaded areas designed to guide analyses and project development. The requirements fit within the general objectives of the national policy but are tailored to improving the understanding of, and protecting key habitats for listed salmon and steelhead in the two basins. The regional executives from USFS, BLM, and NMFS addressed the issues of unroaded areas and watershed approach to consultation in developing measures needed to improve existing plan-level direction. An interagency senior team further reviewed the executives’ proposal and identified a few changes. This modified executive-level approach is reiterated below.

Findings from ICBEMP and other research reveal that some of the highest quality habitat for anadromous fish occurs in unroaded and low density roaded areas. Therefore, it is important to conduct a comprehensive review of existing

unroaded and low density roaded areas throughout the basin and determine their importance for the long-term conservation of anadromous fish stocks. The assessment will enable managers to determine what level of protection is needed for these areas. It will serve as the foundation of a coherent anadromous fish conservation strategy based on the protection of existing high quality habitat with the necessary connectivity between these areas; and it will enable managers and Level 1 teams to evaluate individual projects in the context of this large scale assessment, and to develop multi-year restoration priorities.

The implementation team described in the Accountability Mechanism described above, will select a team of agency technical experts and research scientists to guide this assessment. The assessment shall include the items listed below.

a. Descriptions, locations, and maps of unroaded and low density roaded areas and existing information on the relative habitat value of those areas for anadromous fish. Unroaded and low density roaded areas should include designated wilderness, RARE II areas, or other unroaded areas identified in LRMPs, Outstanding Resource Waters, and information contained within the scientific assessment for ICBEMP.

b. Existing management direction will be summarized for each area identified in item a., above.

c. The team of scientists and agency experts will review this information and make recommendations to senior level managers. Those recommendations and options on future management of these

areas shall, at a minimum, address the following in relation to recovery and conservation of anadromous fish:

1) Need for additional habitat protection;
2) relative risk (near and long term) of developmental activities;
3) priorities for sub-basin assessments or watershed analyses;
4) connectivity between these areas; and
5) restoration priorities.

The above actions shall be completed prior to March 1, 1999, to enable use of resulting information in planning and evaluating 1999 field season projects. Proposed projects requiring road construction in any of these unroaded or low density roaded areas, will be considered to have insufficient analysis for the completion of Section 7 consultation and will not be forwarded to Level 1 teams until this assessment has been completed.

d. If the team in item c., above, recommends that additional habitat protection is required beyond what is existing in current plans for any BLM or National Forest area, a mutually agreed upon strategy will be developed by September 1, 1999, to provide that protection.

f. Subbasin Review/Assessment

Resource information gained at the subbasin level can improve planning and implementation at the broad scale and thereby benefit listed species and their habitat. The ICBEMP project is conducting prototype subbasin reviews that will result in standard guidelines and product types for future subbasin efforts. Similarly, subbasin assessments are being completed by management units in preparation for the periodic (10 or 15 year cycle) updates of LRMPs which will occur over the next few years in the Snake River basin. The Nez Perce National Forest's South Fork Clearwater River Assessment provides a good example of a subbasin assessment which fully considers and formulates management recommendations based on the habitat requirements of salmon and steelhead metapopulations and subpopulations. That type of analysis uses a broad perspective to begin characterizing the contributions of individual watersheds to the survival and recovery of the listed species; and sets the stage for watershed analyses to refine management objectives developed through subbasin assessment.

Without such assessments and reviews to provide a multi-scale context of habitat status and restoration needs within subbasins, line officers, project planners, and Level 1 teams are often unable to properly assess the significance of localized or dispersed habitat alterations on listed species during project-by-project reviews. Thorough subbasin assessments and reviews may require some time to complete, as ICBEMP databases may first need to be updated to accurately

characterize watersheds within subbasins. As assessments and reviews are completed and their results incorporated into watershed analysis prioritization and project planning, this should ensure that projects are designed to avoid or minimize adverse effects on listed species and designated critical habitat.

Prioritization and completion of subbasin-scale assessment is a critical action. Among other benefits, subbasin information provides the perspective necessary to determine which watersheds should be prioritized for subsequent analysis. Until experience is gained in conducting these subbasin assessments each management unit will be expected to complete a minimal number. Once the analytical expertise is developed, the assessment pace should be accelerated. The USFS, BLM, and NMFS developed the multi-scale analysis process described below. This process would be phased-in if current efforts to complete a long-term strategy are further delayed or abandoned. The agencies described an approach of increasing reliance on this information, as it becomes available, to guide projects for the conservation of the listed species.

By May 1, 2000, the USFS and BLM, in coordination with NMFS, shall complete one subbasin assessment per management unit. Beyond 2000, subbasin assessments shall continue at a rate of at least one per management unit per year. Subbasins will be chosen based on the priorities determined in the basin-scale review. These subbasin assessments will adhere to protocols and provide the products mutually agreed upon by the USFS, BLM, and NMFS. NMFS present expectations for protocols for these subbasin assessments include: a) South Fork Clearwater River assessment methods and procedures; b) Procedures developed by Kerry Overton, Rocky Mountain Research Station; or c) Other jointly agreed upon procedures. This approach is fully described in Appendix 2, mechanism number five.

B. Effects of Upper Columbia River Basin LRMPs

The discussion of effects of plan-level direction in the Snake River basin (section VIII, above) focuses on PACFISH and subsequent plan-level direction developed through ESA section 7 consultations on salmon. That discussion is also relevant to evaluating the effects of LRMPs in portions of the upper Columbia River basin, where all of the BLM Spokane District, approximately half of the ONF, and a small portion of the WNF

within the range of the steelhead ESU is managed under PACFISH. In the section below, NMFS explores to what extent the analysis of effects for the Snake River basin also applies to the portion of the upper Columbia River basin managed under PACFISH. The NMFS then discusses the effects of LRMPs as amended by the NFP, which governs actions in the remaining portions of the National Forests and BLM Districts within the range of the upper Columbia River basin steelhead ESU. That discussion includes a comparison of PACFISH and NFP as direction for planning actions to minimize adverse affects on, and avoid jeopardizing listed species.

The NMFS recognizes that there are many different ways to conserve ESA listed species and designated critical habitat. The NMFS discusses differences between PACFISH and NFP as a means of describing the plan-level direction provided by each strategy and evaluating their potential effects. Further, NMFS considers how these strategies combine on the ONF and WNF, to evaluate the effects of implementing those LRMPs.

1. Effects of LRMPs on Areas Where PACFISH Applies

The discussion of LRMPs in the Snake River basin (above) focused on problems related to inconsistent implementation of existing direction, gaps in the direction, and the adequacy of the recommendations in addressing those problems. The NMFS has less background reviewing actions produced under PACFISH-amended LRMPs in the upper Columbia River basin than in the Snake River basin, because the former did not contain ESA listed anadromous fish prior to October 1997. These management areas have, like the Snake River basin National Forests and BLM Districts, been implementing PACFISH for almost three years. The requirements of PACFISH become more stringent now that listed fish are present in the upper Columbia River basin. For instance, most of the management activity-specific standards require both that actions not prevent or retard attainment of RMOs and that actions avoid adverse effects on listed anadromous fish. Typically those two requirements overlap greatly; however, in some instances the latter requirement demands additional mitigation measures. For example, grazing activities would need to not only avoid measurably slowing recovery of streambank stability but also avoid disturbing spawning fish and redds.

Under PACFISH, the listing of steelhead would not, however, automatically extend to steelhead the full suite of measures applied for salmon in the Snake River basin. For instance, PACFISH treats only those watersheds which contain designated critical habitat for listed fish as key watersheds (PACFISH p. C-20). Critical habitat for steelhead has not yet been designated; therefore, areas in the upper Columbia River basin governed by PACFISH would not become key watersheds. PACFISH also requires that, within the range of listed salmon, RMO and RHCA modifications be done in consultation with NMFS (PACFISH p. C-5 and C-8). It is not clear that this requirement would extend to the range of listed steelhead.

Beyond the requirements in PACFISH, recommendation 8 of the BA would institute treatment of all watersheds within the PACFISH portion of the upper Columbia River basin as key watersheds, conferring the 100-foot PACFISH standard RHCA on intermittent streams. Further, recommendation 1 of the BA would extend the 1995 LRMP Opinion guidelines, and other direction developed in the Snake River basin to the portion of the upper Columbia River basin managed under PACFISH. Guidance subsequent to PACFISH is implemented primarily through the streamlining MOA process. Management areas within the upper Columbia River basin do have some experience with the streamlining MOA, having completed conferences on steelhead for various actions during the past several months. Streamlining MOA teams became active in March 1997 on the WNF, in May 1997 on the ONF, and in May 1997 on the BLM Spokane District. During that brief period of reviewing actions, NMFS' Level 1 team members found that actions planned in these management areas were not likely to adversely affect steelhead or their habitat.

Actions appear to have been well planned to meet ESA requirements so far in the upper Columbia River basin, in spite of the existence of the same weaknesses in plan-level direction identified for the Snake River basin. Watershed analysis is not emphasized in PACFISH, and yet several watershed analyses have been completed in the upper Columbia River basin as the basis for planning actions. The BA noted that National Forests and BLM Districts in the upper Columbia River basin appeared to be meeting steelhead habitat restoration schedules established in the LRMPs prior to the listing of steelhead. Further information from USFS indicates, however, that restoration activities are not meeting the schedule set prior to the steelhead listing (ONF Forest fishery biologist, November 1997, electronic mail to

Gordon Haugen, USFS). Moreover, that original restoration schedule may not be adequate to ensure the survival and recovery of steelhead populations, which have declined substantially since the schedule was established.

The early record of well designed projects is encouraging; however, the management units have the same basic funding constraints for implementing PACFISH as those in the Snake River basin, and further experience with consultation may show some of the same implementation problems. As in the Snake River basin, these management units have not completed the inventory, analysis, and minimization of effects of existing roads, as required by PACFISH standards RF-2 and RF-3. The management units are also facing substantial reductions in range program funds which limit their abilities to make the improvements on allotments and complete the monitoring required by PACFISH. Increased assurance is needed that PACFISH and other plan-level direction will be implemented uniformly on these management units in the Snake River basin. This greater assurance could be gained from providing direction at the proper level of authority to be effective, and providing a mechanism to increase USFS and BLM accountability for implementing plan-level direction.

Some of the essential elements of strengthening PACFISH for extended application in the Snake River basin (recommendations 4, 5, and 7 of the BA) are not necessarily extended to the upper Columbia River basin management units. For instance, stronghold subbasins (recommendation 4) were not designated in the upper Columbia River basin. Also, the BA stipulates that restoration will be accelerated in the Snake River basin (recommendation 5) but does not mention the upper Columbia River basin. Increased emphasis on watershed analysis (per recommendation 7) would occur in both basins.

As in the Snake River basin, efforts related to the proposed action (national roads policy, NMFS' matrix for evaluating actions by watershed, and results of subbasin assessments and reviews) will influence project planning and aid the extended application of PACFISH. The NMFS matrix is already in use on the upper Columbia River basin management units; however, it has been applied so far mainly on a project-by-project basis. It will be important to use the matrix to analyze groups of projects by watershed, and thus gain a better understanding of the combined effects of USFS/BLM actions on listed steelhead and their habitat.

Interagency agreement on mechanisms to implement the BA recommendations added consistency to the approach in the two basins. For instance, restoration would be accelerated, and increased emphasis would be placed on watershed analysis in the PACFISH portion of the upper Columbia River basin, as in the Snake River basin (refer to section VIII.A.3, above). The various mechanisms for implementing the BA recommendations described in Appendix 2 and discussed in section VIII.A. are to be applied similarly in each basin.

2. Effects of LRMPs on Areas Where NFP Applies

The majority of lands administered by WNF, and a large portion of lands administered by ONF in the upper Columbia River basin are managed under the NFP rather than PACFISH. The NFP takes in almost all of the Wenatchee and Entiat Rivers on the WNF, and about half of the Methow River on the ONF. The Okanogan River watershed on ONF is managed entirely under PACFISH.

In contrast to PACFISH, the NFP is a long-term strategy which establishes analyses, priorities, allocations, standards and guidelines, and restoration plans for a multitude of species and their habitats. The NFP consists of three intertwined components relevant to the analysis of effects on listed steelhead:

(1) Aquatic Conservation Strategy (ACS);
(2) land allocations and standards and guidelines; and
(3) monitoring.

The ACS is framed by a set of nine objectives and the following four cornerstone elements:

(1) riparian reserves;
(2) key watersheds;
(3) watershed analysis; and
(4) watershed restoration.

In amending the LRMPs, the NFP established a suite of land allocations on each National Forest. These allocations were designed to ensure actions would meet ecosystem management goals, including ACS objectives. Key watershed and riparian reserve designations are allocations which substantially restrict management activities in those areas. Other reserve allocations with benefits to steelhead habitat include late-

successional reserves (LSR), administratively withdrawn areas (AWA), and Congressionally reserved areas (CRA). Standards and guidelines are another component of ACS designed to ensure actions comport with ACS objectives. The standards and guidelines address timber harvest, related silviculture, road management, fire and fuels management, general riparian habitat management, watershed and habitat restoration, fish and wildlife habitat management, minerals management, recreation management, grazing management, and watershed analysis. Lastly, the NFP establishes a monitoring program on each National Forest designed primarily to determine if NFP direction is being implemented, if ACS objectives are being achieved, and if the management plans need revision to improve their effectiveness in guiding actions toward ACS objectives. A complete description of the NFP ACS is found in the NFP Record of Decision (USFS and BLM 1994).

Several of the NFP components mentioned above are comparable to components of PACFISH, but there are also key differences. Appendix 4 provides a comparison of the two strategies. The discussion below highlights the key similarities and differences between the two strategies. Because the various components (key watersheds, allocations, standards and guidelines, etc.) are intertwined, the discussion sections below do not entirely separate these topics, but rather provide a general outline for evaluating effects of NFP-amended LRMPs and noting how they differ from PACFISH-amended LRMPs.

a. Riparian Reserves

Riparian reserve and RHCA widths by water body type are essentially the same in the two strategies. These widths are designed to maintain high levels of riparian ecological functions including shade, root strength, large wood, litter fall, filtering of surface erosion, and microclimate functions (FEMAT 1993). Under both management strategies, limited levels of management activities may occur within these riparian areas. Appendix 5 compares prescriptions for management within riparian areas under the two strategies. A key difference between PACFISH and NFP is that RHCA widths under PACFISH may be adjusted based on less stringent analysis requirements (only site-specific analysis needed) than is required to adjust NFP riparian reserve widths (watershed and site-specific analyses needed). The NMFS' experience with

consultations on actions governed by LRMPs amended or modified by PACFISH indicates that interim RHCA widths have been maintained in the majority of instances; however, where widths have been adjusted, documentation has typically been insufficient to support the adjustments (January 13, 1997, memorandum from Gordon Haugen, USFS, and Michael Crouse, BLM, to Regional Foresters and others regarding 1996 PACFISH field reviews).

b. Key Watersheds and Other Allocations

The NFP establishes land allocations in addition to riparian reserves which benefit upper Columbia River steelhead, whereas PACFISH does not. The NFP established LSRs and key watersheds which restrict land management activities and require restoration in important watersheds for steelhead. Key watersheds were identified in landscape reviews by the NFP Forest Ecosystem Management Assessment Team (FEMAT) which considered habitat requirements for a multitude of species, including approximately 300 at-risk anadromous fish stocks, including upper Columbia River steelhead. Key watersheds were designed to provide interconnected strongholds of high quality streams for Pacific salmonids, well distributed across the landscape. For strategically located key watersheds where current habitat condition is degraded, this designation provides a focus for habitat restoration efforts. The NFP placed watersheds in these three categories:

(1) tier 1 key watersheds, which are to be managed for at-risk salmonids, bull trout, and resident fish;

(2) tier 2 key watersheds, which are to be managed for high quality water; and

(3) non-key watersheds, which are to be managed in compliance with standards and guidelines and ACS objectives.

Standards and guidelines for key watersheds are designed to promote the fish refugia and water quality objectives of these watersheds. For instance, road building is prohibited in inventoried roadless areas within key watersheds; and outside of roadless areas, emphasis is placed on reducing existing road mileage.

Land allocations such as LSRs were developed, and existing land allocations such as CRAs and AWAs were considered, in ensuring that habitat for anadromous fish would be maintained and natural recovery processes allowed to occur in key watersheds. On the ONF and WNF, steelhead occur in both NFP key and non-key watersheds. Of the lands managed under NFP in the upper Columbia River basin, approximately 86% of WNF and 67% of ONF are in NFP key watersheds. Table 7 provides a list of NFP key and non-key watersheds for the two National Forests.

Table 7. Key and non-key watersheds where upper Columbia River steelhead occur.

Administrative Unit	*River Basin*	Tier 1 Key Watershed	Tier 2 Key Watershed	Non-Key Watershed
Wenatchee NF	*Entiat River*	Entiat River		
		Mad River		
		Roaring Creek		
	Wenatchee R.	White River		Nason Creek
		Little Wenatchee R.		Chiwaukum Creek
		Chiwawa River		Peshastin Creek
		Icicle Creek		
		Ingalls Creek		
Okanogan NF	*Methow R.*	Twisp River		Gold Creek
		Early Winters/Wolf Creeks		
		Upper Methow River		
		Chewuch River		

Land allocations within both key and non-key watersheds provide an indication of the level of restriction on

management activities within the portions of the National Forests managed under NFP. On the WNF, CRAs, LSRs, and AWAs make up approximately 78% of the total acreage within key watersheds, and 93% of the total acreage within non-key watersheds. On the ONF, CRAs, LSRs, and AWAs make up approximately 87% of the total acreage within key watersheds, and 73% of the total acreage within non-key watersheds. As a result, of the lands administered under NFP, only seven percent of WNF and 27% of ONF outside of key watersheds is in a land allocation (e.g. matrix) where scheduled timber harvest is permitted.

c. Watershed Analysis

The NFP established goals for completing watershed analyses to strengthen the scientific foundation for planning actions. Since the NFP became effective, the WNF and ONF have completed watershed analyses for most of their key watersheds. Watershed analysis is also a component of the PACFISH guidance governing the other portions of these National Forests and on the BLM District; however, PACFISH places a lower priority on completing watershed analysis. Under PACFISH, watershed analyses may be completed as the basis for planning actions, but are required only when certain management activities (e.g., road construction in RHCAs) are planned. As a result, watershed analyses in the Snake River basin tend to be project-driven, rather than undertaken to create a foundation for developing watershed-specific management strategies. Fewer watershed analyses have been completed on the portions of the ONF[6] managed under PACFISH than on the portion managed under NFP.

d. Watershed Restoration

Both NFP and PACFISH provide management direction to encourage activities that do not interfere with natural restoration processes. PACFISH attempts to accomplish this through the application of RHCAs and a suite of standards and guidelines aimed at not measurably slowing natural processes which advance streams toward RMOs. Similarly, the NFP requires that actions comport with standards and guidelines and ACS

[6] The WNF is not included here because very little of the WNF is managed under PACFISH.

objectives. In addition, the NFP establishes firm priorities and funding for active restoration projects based on needs of anadromous fish and other species and opportunities to achieve ACS objectives. Important watershed restoration activities, such as reductions in road mileage and creation of livestock exclosures, have occurred under both NFP and PACFISH. However, in contrast to the NFP, PACFISH has provided neither a strategic means for prioritizing, nor additional funding for restoration actions.

e. Standards and Guidelines

Standards and Guidelines for management actions described in PACFISH generally include more detail (and quantifiable objectives) than those in the NFP, but cover many of the same activities. Appendix 6 shows the similarities among the two strategies of various standards and guidelines for activities in riparian areas. As noted above, the NFP supports the implementation of these standards and guidelines with land allocations geared toward watershed objectives, whereas PACFISH does not.

The NMFS' experience in the Snake River basin indicates that when the plan-level direction is primarily a list of standards and guidelines, these may not be consistently interpreted or implemented, and in some instances have limited effectiveness in avoiding adverse affects on listed fish. For example, some of the PACFISH standards and guidelines for roads have been implemented, and others (e.g. RF-2 and RF-3) have not. Also, levels of grazing have been planned on numerous allotments which clearly hinder the recovery of degraded streambanks. National Forests and BLM Districts have also not consistently issued leases, permits, rights-of-way, and easements to avoid adverse effects (PACFISH standard LH-3), in part because of the constraints of other laws such as ANILCA and state water laws. As noted previously, the upper Columbia River basin Level 1 teams have not yet been presented actions which are likely to adversely affect or even jeopardize the continued existence of listed steelhead. The potential for those actions in the area covered by PACFISH exists, however, until better mechanisms are established to ensure the implementation of PACFISH and related plan-level direction.

The streamlining MOA Level 1 team on the ONF has found, based on limited experience, that actions with potentially greater levels of effect on steelhead are planned on the PACFISH portion of the National Forest than on the NFP portion. Land allocation constraints in the NFP portion of the ONF seem to have directed larger projects to the PACFISH portion. In particular, the Beaver Creek and South Twentymile timber sales have raised concerns over effects on hydrologic regimes in those watersheds. Those concerns have been addressed through action-specific consultation.

On the WNF, the majority of both key and non-key watersheds are in reserves (LSRs, CRAs, and AWAs). A few streams, such as Nason Creek, a non-key watershed tributary of the Wenatchee River, have reserves only in headwater areas and do not have key watershed requirements (e.g., avoid road construction in roadless areas and reduce road mileage elsewhere). In those few areas, managers appear to have a level of discretion similar to that on lands managed under PACFISH; that is, to develop land management actions which comport with ACS objectives and standards and guidelines. The requirement for actions to meet ACS objectives and standards and guidelines can be open to various interpretations. The NMFS' matrix may be used as a tool to further define the steelhead habitat conditions which should be present to enable certain activities to occur without degrading habitat elements or hindering recovery of at-risk or non-functioning elements. The results of effectiveness monitoring of projects will also help determine the effects which can be expected from various management activities.

f. Monitoring

Monitoring programs are implemented under both PACFISH and NFP. Monitoring of PACFISH has shown mixed results (refer to Table 3, above). Specific implementation monitoring information was not available for the PACFISH portions of the WNF and ONF. For the areas covered by NFP, 1996 implementation monitoring of timber sales on various National Forests, including ONF and WNF, found compliance with 95% of the applicable requirements. Most instances of non-compliance were estimated to have minor biological effects. Management direction was issued to correct the few instances estimated to be of medium to high concern (Alverts *et al.* 1997). Effectiveness monitoring under the NFP will occur at the regional scale under established protocols with the oversight

of a Research and Monitoring Committee. In contrast, levels of effectiveness monitoring under PACFISH differ by National Forest/BLM District and by action, and are often dictated by requirements under action-specific consultation rather than by plan-level direction. In general, both PACFISH and NFP have not been implemented over a sufficient period of time or with sufficient baseline information to evaluate the effectiveness of these strategies in producing actions which have improved and maintained habitat for steelhead and salmon.

C. Summary of Effects of LRMPs (Both Basins)

The influence of LRMPs on the development of projects which adversely affect listed anadromous fish is described above (section VIII.A-B). The NMFS has found from several years of consultations in the Snake River basin and one year of conferences in the upper Columbia River basin that the majority of the projects planned under the PACFISH and NFP-amended LRMPs are not likely to adversely affect listed species or their habitat.

Snake River and PACFISH Portion of Upper Columbia River Basin

While the majority of projects have been “not likely to adversely affect,” there have been many examples of projects planned under the PACFISH-amended LRMPs which have not avoided or adequately minimized the risk of adverse effects. The recommendations in the BA attempt to strengthen the short-term plan-level direction to achieve more consistent avoidance/minimization of adverse effects. Considering those recommendations, NMFS found various factors which could still lead to projects which adversely affect steelhead, salmon, or their habitat. These potential sources of adverse affects are listed below.

1) Implementation of existing plan-level direction has not been consistent, and implementation of BA recommendations could also be inconsistent unless improved mechanisms are established to ensure USFS and BLM are accountable for implementation.

2) Recommendations would be implemented on a project-specific basis via the streamlining MOA process; yet, Level 1 teams lack authority to ensure recommendations 4, 5, and 7 will be implemented.

3) PACFISH road standards RF-2 and RF-3 and grazing standard GM-1 were not highlighted for implementation in the BA; however, without implementing those standards, widespread sources of habitat degradation would likely continue to degrade or retard recovery of habitat for steelhead and salmon.

4) Proposed plan-level direction did not address identifying, conserving, and reconnecting high quality habitats, of which roadless areas are a good indicator. The national roads policy offers an interim moratorium on road construction within roadless areas, and initiates analyses of these areas; however, objectives and schedules had not been developed to ensure this task is completed expeditiously and with regional focus of the conservation of listed fish species.

5) The proposed plan-level direction did not re-establish watershed scale consultations on groups of projects, and thus did not ensure adverse effects from combinations of projects are avoided or minimized.

6) The proposed plan-level direction did not re-emphasize the need for USFS and BLM to exercise full authority to minimize adverse effects from mining and special use permit actions. Consultation records show that these categories of actions are among the most likely sources of adverse effects on the listed species and their habitat.

7) The proposed plan-level direction did not provide a clear strategy to bolster PACFISH for the longer interim period. Elements of such a strategy are proposed in recommendations 4, 5, and 7, and information which would support the strategy is being developed through subbasin assessments and reviews. Mechanisms and schedules had not been provided, however, to ensure the recommendations are implemented and coordinated with the results of subbasin assessments and reviews to develop the foundation of a longer-term aquatic conservation strategy.

In response to these concerns, interagency staff and executives developed the five mechanisms discussed above in section VII.A. to assure that projects planned according to the management direction of PACFISH and the nine recommendations are not likely to jeopardize listed species or adversely modify designated critical habitat. Consequently, these mechanisms, as well as PACFISH and the nine recommendations, are considered to be part of the continuing action for purposes of determining the effects of the action. Subelements under each of the five mechanisms were also addressed and where possible agreed to through an interagency effort. All five mechanisms and their subelements are also listed in the Incidental Take Statement, section XIV, as terms and conditions (Appendix 2).

NFP Portion of Upper Columbia River Basin

In contrast to PACFISH, the NFP is a long-term strategy designed to conserve steelhead and other species from a foundation of ACS objectives, allocations and standards and guidelines which support the objectives, analyses which clarify how to achieve the objectives, and a restoration program to speed progress toward the objectives. The basic elements of the standards and guidelines in NFP and PACFISH are similar. However, the preponderance of key watersheds, and other reserve land allocations with explicit conservation objectives, on the NFP portion of ONF and WNF, substantially increase the probability that actions will be designed to avoid adverse effects on steelhead and their habitat.

The large acreage of reserves does not guarantee that actions with adverse effects will not be planned under the NFP. Just as on areas managed under PACFISH, actions such as dredge mining of spawning gravels, road construction with multiple stream crossings in watersheds which already have degraded substrate conditions, and overgrazing along or above key spawning reaches are possible in both non-key and key watersheds. Objectives and standards and guidelines within NFP are not specifically prescriptive in most cases, but generally help direct managers to avoid those actions. Further, application of NMFS' matrix, part of the proposed action (BA recommendation #3), serves as supplemental guidance which defines adverse effects and provides a framework for the types of activities managers should plan to be in compliance with ESA.

The consultation streamlining MOA has helped ensure that the matrix, or some other agreed-upon process, will continue to be used to evaluate, and identify needed adjustments in project design. The matrix is part of the proposed action (see BA Recommendation #3) and, therefore, should be implemented during watershed and project-level evaluations. Use of the matrix will

help to ensure proposed actions comport with ACS objectives and comply with ESA.

IX. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state and private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this Opinion, the action encompasses those portions of 17 administrative units within the subject ESUs.

Quigley and Arbelbide (1997) observed that large portions of the Columbia River basin are state and private land. Various effects on steelhead and salmon have occurred from agricultural development, dam and road construction, urbanization and other activities on state and private lands. Although not quantified, the effects of management activities on existing conditions on non-Federal lands likely have been greater than those on Federal lands, as evidenced by the fact that most of the remaining steelhead and salmon habitat of high and moderate quality is found within lands administered by the USFS and BLM.

Information on specific activities planned or foreseeable on non-Federal land was not provided in the BA. The NMFS assumes, conservatively, that management impacts from non-Federal activities which have degraded or hindered recovery of elements of anadromous fish habitat will continue in the short-term. This assumption may be overly conservative in the long-term, given development of non-Federal conservation programs, such as the Idaho bull trout plan, and Habitat Conservation Plans (HCP) developed with non-Federal entities to fulfill the requirements of ESA section 10.

The upper Columbia River basin ESU and Snake River basin ESU have similar patterns of development to the larger Columbia River basin. However, because of the amount of Federal ownership within these two ESUs, they contain a higher percentage of high to moderate quality steelhead habitat than the Columbia River basin as a whole. This places added emphasis on the importance of protecting steelhead on lands administered by USFS and BLM in these two ESUs (Lee et al. 1997).

X. Conclusion

The NMFS has determined, based on the information, analysis, and assumptions described in this Opinion, that continued

implementation of the 18 LRMPs is not likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of designated critical habitat. In arriving at this determination, NMFS considered the current status of the Snake River basin and upper Columbia River basin steelhead and salmon ESUs; the environmental baseline conditions; the cumulative effects of actions anticipated in the action areas; the likely effects of the LRMPs; the nine adopted BA recommendations, and the five mechanisms described in this Opinion that were developed by agency staff and executives to assure implementation of the nine recommendations. The NMFS understands that the nine recommendations and the five broad implementing mechanisms are part of the continuing action.

Subelements under each of the five mechanisms were also addressed and where possible agreed to through an interagency effort. All five mechanisms and their subelements are also listed in the Incidental Take Statement, section XIV, as terms and conditions (Appendix 2).

The NMFS based its conditional no jeopardy conclusion in the 1995 LRMP Opinion on several important assumptions. The NMFS assumed the LRMPs, with additional measures specified in the 1995 Opinion, would prevent Federal actions from precluding any future recovery options; conservation measures in PACFISH and the 1995 Opinion would be implemented with rare exceptions; PACFISH would only be an interim strategy; a long-term aquatic conservation strategy would replace PACFISH in a short time frame; and plan-level direction would help avoid

jeopardy determinations at the project-level. The performance record described in the BA and this Opinion indicates that some of these assumptions were incorrect. Thus, action agencies amended the proposed action by providing nine recommendations to improve project planning and correct implementation deficiencies.

In spite of additional recommendations, a major weakness in PACFISH has been, and still is, the lack of a comprehensive aquatic conservation strategy for listed anadromous fish. PACFISH was intended to maintain or improve the environmental baseline while a long-term strategy is being developed. Given that degraded baseline conditions were part of the rationale for listing salmon and steelhead, maintenance of baseline conditions cannot suffice as a long-term strategy. Indefinite extension of PACFISH, delays the recovery of salmon and steelhead, and increases the risk that key population segments will be irretrievably lost. PACFISH maintains a fragmented network of habitats and degraded habitat conditions, where they presently exist, because it lacks a comprehensive restoration and management strategy for watersheds with anadromous fish.

Interim direction did not provide adequate assurance that future actions would not result in adverse effects to listed salmon and steelhead during the indefinite period that the interim direction might remain in place. To address these shortcomings as described in section VIII, above, additional mechanisms to improve PACFISH planning and implementation, and to address the extended timeframe, have been developed by staff and executives of the USFS, BLM, and NMFS. These mechanisms are part of the continuing action. The mechanisms and their subelements are also included as terms and conditions in the incidental take statement to minimize take of listed species. With the adoption of the nine BA recommendations and the five implementing mechanisms specified in this Opinion, interim direction will offer additional short-term conservation assurances for listed species if all provisions, including accelerated restoration, are fully implemented. The recommendations and mechanisms will require action agencies to renew their commitment to fully implement PACFISH, elevate the priority they place on it, and internalize and integrate its intent with other land management programs.

Careful adherence to all existing plan-level direction during project planning and implementation for the extended interim period will increase assurances that jeopardy can be avoided at the project level. The existing applicable direction includes full implementation of requirements and guidelines:

(1) described in this Opinion;
(2) established through the adoption of the nine BA recommendations;
(3) identified in the October 8, 1996, NMFS' PACFISH extension letter;
(4) identified in NMFS 1995 LRMP Opinion;
(5) contained in PACFISH and in the PACFISH Opinion; and
(6) contained in the individual LRMPs.

The NMFS believes that if the USFS and BLM fully implement these requirements and guidelines, project-level actions carried out under PACFISH and the nine recommendations are not likely to jeopardize listed species or adversely modify critical habitat. This conclusion is expressly based on the expectation that each element of PACFISH and the nine recommendations will be fully implemented, through the five mechanisms outlined in section VIII. of this Opinion. Any departure from full implementation would lead NMFS to a different conclusion as to the effects of the action and would trigger reinitiation of consultation (see section XI. below), and it may also result in findings that specific projects carried out under interim management direction will jeopardize listed species. In addition, departure from the terms and conditions of the incidental take statement will result in the lapse of the protective coverage of section 7(o)(2) with regard to prosecution for "take" of listed species.

In this Opinion, NMFS also evaluated two LRMPs (for WNF and ONF) which were amended by both PACFISH and the NFP. The NMFS evaluated the adequacy of the NFP for guiding projects to avoid and minimize adverse effects on steelhead on WNF and ONF. In contrast to PACFISH, NFP is a long-term strategy designed to achieve restoration, as well as avoid and minimize degradation of important watersheds for anadromous fish. Key strengths of NFP on the WNF and ONF include: ACS objectives; standards and guidelines to ensure projects comport with ACS objectives; allocations designed to protect important

watersheds for steelhead; watershed analyses to develop specific objectives and means to achieve objectives for watersheds; and watershed restoration based on watershed analysis.

A possible weak link in the NFP ACS is the lack of a process to ensure that projects comport with the ACS objectives. Consultation streamlining subsequently provided this process; and the NMFS matrix became a tool used in consultation streamlining. Those means for achieving the ACS objectives are not part of the proposed action and are not mandatory; therefore, NMFS identified the need to reinforce, through terms and conditions in this Opinion, the measures needed to ensure projects comport with ACS objectives. As noted above, departure from the terms and conditions of the incidental take statement will result in the lapse of the protective coverage of section 7(o)(2) with regard to prosecution for "take" of listed species.

XI. Reinitiation of Consultation

Consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; a PACFISH implementation report indicates inconsistent application of interim direction; ICBEMP is indefinitely postponed or canceled; or a new species is listed or critical habitat is designated (excluding critical habitat that may be designated for upper Columbia River steelhead) that may be affected by the action (50 CFR 402.16). Failure to adhere to the implementing mechanisms described in this Opinion, including failure to provide specified reports, inventories, and analyses within specified timelines, will be considered modification of the action in a way that causes an effect on listed species that was not previously considered and will require reinitiation of consultation. Conversely, if consistently and fully implemented this interim direction is effective until long-term management approaches are adopted and implemented.

Specific modifications of the continuing action that will require reinitiation of consultation are listed below.

1. Evidence of inconsistent application of PACFISH-related direction has been noted in the BA and during 1996 and 1997, interagency PACFISH field review reports. Similar evidence in 1998, 1999, or beyond will change NMFS' conclusion on the effects of the continuing actions, and will result in the expiration of this Opinion unless corrective actions are taken. The NMFS will notify the USFS and/or BLM if such evidence is found, and the agencies will have 30 days to demonstrate corrective actions to avoid the expiration of this section 7 consultation.

2. If the process for adopting a long-term strategy (ICBEMP) is abandoned, this Opinion will expire 6 months after the long term strategy is abandoned, and reinitiation of consultation will be required.

3. The NMFS will assess action agency consistency with mechanisms contained in section VIII, above, and Appendix 2, below, of this Opinion during six month intervals. This assessment will be based on consideration of action agency Implementation Reports, product descriptions, and whether established timeframes have been met. Evidence that the mechanisms or their subelements are not being fully implemented will change NMFS' conclusion on the effects of the continuing actions, and will result in the expiration of this Opinion unless corrective actions are taken. The NMFS will notify the USFS and/or BLM if such evidence is found, and the agencies will have 30 days to demonstrate corrective actions to avoid the expiration of this section 7 consultation.

XII. Conservation Recommendations

This Opinion continues to update and build on previous interim direction contained in PACFISH, the PACFISH Opinion, the 1995 LRMP Opinion, and in the PACFISH extension letter. Because portions of these interim documents have been updated by more current but interrelated Opinions, the Accountability Team (identified in Appendix 2, Mechanism #1) should review all interim strategies to summarize relevant requirements into a readily useable guidance document. The guidance document should be made available to project planners, line officers, interagency teams, and others involved in project development, oversight, and monitoring. This task should be accomplished within 120 days of signing this Opinion.

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XIV. Incidental Take Statement

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which would include, but are not limited to breeding, feeding, and sheltering. Incidental take is take of listed species that results from but is not the purpose of, the Federal agency or the applicant carrying out otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reason and prudent measures.

The measures described below are non-discretionary. They must be implemented by the action agency so that they become binding conditions necessary in order for the exemption in section 7(o)(2) to apply. The 17 administrative units have a continuing duty to regulate the activity covered in this incidental take statement. If the 17 administrative units: (1) fail to adhere to the terms and conditions of the incidental take statement, and/or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

A. Amount or Extent of Incidental Take

Notwithstanding the NMFS' conclusion that continued implementation of management direction in the subject LRMPs is not expected to jeopardize the continued existence of the five

listed species or result in the adverse modification of critical habitat, agency decision-makers retain enough discretion when implementing management direction in the LRMPs that the NMFS anticipates more than a negligible likelihood of incidental take of these species from such actions. The NMFS is unable to anticipate all possible circumstances related to continued LRMP implementation, including plan-level actions or individual projects that might be developed in the future. As a result, the NMFS is unable to issue a "blanket" incidental take statement or a comprehensive list of reasonable and prudent measures to cover all programs and actions subsequently implemented pursuant to LRMP management direction.

The NMFS is able to prescribe reasonable and prudent measures that will reduce the overall expected level of incidental take associated with continued implementation of LRMPs management direction by ensuring that planned actions are fully consistent with all relevant plan-level direction, including the nine recommendations contained in the BA. These reasonable and prudent measures are based on a process described in the BA for evaluating and screening proposed actions that is described in the BA. The evaluation and screening of proposed actions is accomplished through the ESA consultation process developed to implement the May 31, 1995, interagency streamlining agreement (MOA), the Matrix of Pathways and Indicators from NMFS (1996), and increased action agency priority and internalization of the interim PACFISH direction. Interagency Level 1 teams evaluate the effects of proposed actions against the environmental baseline at project and watershed scales. They determine whether effects on listed and proposed species have been minimized by fully applying the relevant LRMP management direction, the BA, and relevant terms and conditions from this Opinion in the design of proposed actions.

The first step in this process, in fact the ultimate goal of Level 1 review, is to design actions that are not likely to adversely affect listed or proposed species, and thus avoid the likelihood of incidental take and the need for formal consultation. This first step involves both updating the environmental baseline and planning actions within the context of that baseline. The second step in this process, for those cases where adverse effects are likely to occur, is for the Level 1 team to reassess all available plan-level direction, and fully incorporate adequate measures into the proposed

actions to minimize the likelihood of adverse effects with the goal of avoiding the need for formal consultation and issuance of a project specific biological opinion and incidental take statement. Finally, in those cases where the Level 1 team is unsuccessful in meeting either of these two steps; that is, in cases where proposed actions are likely to adversely affect listed or proposed species and additional measures are needed to minimize incidental take, the NMFS will need to prepare a new Opinion to conclude formal consultation.

It is also appropriate to prescribe reasonable and prudent measures to minimize the likelihood of incidental take associated with implementation actions for which decisions are made at the LRMP scale. For example, the decision to withdraw portions of the planning area from mining development lies at the LRMP scale.

Programmatic Likely to Adversely Affect Actions

The NMFS anticipates that some actions which are fully consistent with the LRMP standards and guidelines may still have more than a negligible likelihood to result in incidental take of listed species. This includes actions considered to be beneficial to the listed species (e.g., instream habitat enhancement projects, culvert replacement upgrades, road decommissioning projects), as well as non-beneficial actions (e.g., road construction, water diversions, road access permits, mining, actions constrained by other laws, and the actions which monitoring later shows are causing habitat degradation). Incidental take associated with these types of projects is expected from detrimental effects on aquatic habitat parameters including substrate quality, turbidity, and suspended sediment levels, all of which may directly affect the life histories of listed salmon and steelhead.

Adverse effects of management actions such as these are largely unquantifiable in the short-term, and without extraordinary costs, may not be measurable as long-term effects on the species' habitat or populations levels. Therefore, even though the NMFS expects some low level of incidental take to occur due to these programmatic actions, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species themselves. In these instances, the NMFS designates the expected level of take as "unquantifiable."

B. Effect of Take

In this Opinion, NMFS has determined that the level of anticipated take associated with continued implementation of the LRMPs is not likely to result in jeopardy to the listed species or result in the adverse modification of designated critical habitat. Likewise, should the action area habitat presently or historically accessible to steelhead addressed in this Opinion be designated as critical habitat, the anticipated level of effect is not likely to result in the adverse modification or destruction of what may become designated critical habitat.

C. Reasonable and Prudent Measures, and Terms and Conditions

The NMFS finds that the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of listed species resulting from continued implementation of the 18 LRMPs. Should habitat inhabited by listed steelhead be designated as critical habitat, these reasonable and prudent measures would also minimize take associated with adverse effects to their habitat. In order to be exempt from the prohibitions of section 9 of the ESA, the USFS and BLM must also comply with the following terms and conditions, which implement the reasonable and prudent measures. These terms and conditions are non-discretionary. The terms and conditions that implement these reasonable and prudent measures are listed in Appendix 2.

1. PACFISH-Amended LRMPs

As described in section VIII., above, and in Appendix 2 of this Opinion, for the PACFISH-amended LRMPs addressed in this consultation, and more specifically for those management units or portions of units where PACFISH applies, each agency shall jointly:

1. Employ a mechanism for accountability and oversight that ensures PACFISH direction, direction in the LRMP Opinions, and the BA recommendations (pp 20-24) are fully implemented through a mechanism other than Level 1 teams. The USFS and BLM shall submit an Implementation Report to NMFS for this item (1.a-1.d, Appendix 2), by November 1998.

2. Complete prior commitments in PACFISH, LRMPs, and previous Opinions to meet the direction in BA Recommendation 7 (increased implementation of watershed analysis), as described in section VIII. of this Opinion. An Implementation Report for this item (2.a and 2.b, Appendix 2) shall be submitted to NMFS, with the road restoration schedule by January 15, 1999. For item 2.c., biannual reviews of projects grouped by watersheds will be completed by January 15, of every other year.

3. Implement conservation actions based on mapping and analysis of unroaded areas and areas of species occurrence; and transition from project-by-project section 7 consultations to watershed-scale programmatic approaches. The USFS and BLM shall submit an Implementation Report for this item to NMFS by September 1, 1999.

4. Exercise their existing authorities on land management programs with a pattern of adverse effects in accordance with ESA section 7(a)(1). This mechanism will be tracked at the project-specific level and does not require plan-level reporting under this Opinion.

5. Implement long-term strategies to accomplish BA recommendations 4, 5, and 7. If ICBEMP is not in place for the 2000 field season, begin implementing key components of a long-term aquatic conservation strategy. The USFS and BLM shall submit an Implementation Report to NMFS for this item (5.a-5.c, Appendix 2) annually beginning in May 1999, and continuing until this Opinion expires or is replaced by the long-term strategy (ICBEMP).

2. NFP-Amended LRMPs

For the portions of WNF and ONF where NFP applies, NMFS identified the need to reinforce the implementation of NFP to ensure protection of listed Columbia River steelhead and their habitat. To reinforce NFP with specific measures, many of which are already in place but not mandatory, the USFS will implement the items listed below.

1. To ensure that proposed actions designed in accordance with relevant standards and guidelines are in fact consistent with the NFP ACS objectives, USFS and BLM decision makers will apply the results of watershed analysis and other relevant information to reach findings that actions either "meet" or

"do not prevent attainment" of the ACS objectives. This finding will be made for grouped actions at the watershed scale (20-200 square miles: typically 5th and 6th field HUCs). The finding will initially be made by management units' ID teams (adhering to plan-level guidance in LRMPs, amendments, plan-level Opinions, etc.), and then verified by level 1 teams. Watershed analysis is required in key watersheds, roadless areas, and riparian reserves before determining how proposed land management activities meet ACS objectives (NFP ROD, page B-20).

a. The finding must be supported by an analysis that includes a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management action maintains the existing condition or moves it within the range of natural variability.

b. Management actions that do not maintain the existing condition, or lead to improved conditions in the long term would not "meet" the intent of the Aquatic Conservation Strategy and thus should not be implemented.

2. Implement the Level 1 team consultation process and apply the NMFS' matrix (NMFS 1996) consistent with BA recommendation #3, to:

a. Continually update the environmental baseline by maintaining a list of the status of, and documenting the effects of all management actions, including restoration efforts, at the watershed scale.

b. Evaluate proposed actions grouped by watershed to determine whether groups of proposed actions are either not likely to adversely effect or likely to adversely effect listed steelhead;

c. Provide narrative rationale supporting the results summarized in the matrix checklists, adding sufficient detail to fully explain any finding where a habitat indicator would be degraded; and

d. Carry out the required interagency coordination to complete the consultation process informally or formally.

XV. Appendices

APPENDIX 1 Complete Description of Nine Additional Items Comprising the Continuing Actions (Nine BA Recommendations)

APPENDIX 1

Complete Description of Nine Additional Items Comprising the Continuing Actions (Nine Biological Assessment Recommendations)

These nine Biological Assessment (BA) items are not exclusive of one another because of the overlaps defined in the summary of effects. These items are intended to be additive for each of the four applicable Federal actions. They are intended to be implemented in combination to reduce and avoid adverse effects to steelhead and listed salmon.

1) The measures identified in the National Marine Fisheries Service's Biological Opinion (BO) of March 1, 1995, and all subsequent related direction, on Land and Resource Management Plans (LRMPs) in the Snake River basin Evolutionarily Significant Unit (ESU), should be extended to all LRMPs in those portions of the upper Columbia River basin ESU and Snake River basin ESU upon which LRMP consultation was not initiated for salmon. This includes, but is not limited to, designation of high priority watersheds and consultation on all ongoing Federal actions that may affect steelhead. The Clearwater and Nez Perce National Forests and the Cottonwood Resource Area have already begun to characterize and prioritize watersheds. Portions of PACFISH and the consultation record on LRMPs for salmon designed to reduce or avoid adverse effects should be extended to watersheds containing steelhead throughout both subject ESUs. It is recommended that the National Marine Fisheries Service's BO of March 1, 1995, and all subsequent related direction, be extended indefinitely for all LRMPs in both ESUs, until such time as new, long-term, plan-level direction is adopted for both salmon and steelhead.

2) Within the area of the Snake River basin ESU where consultation has been concluded on LRMPs and site specific federal actions, it is recommended that 17 SBOs for salmon immediately be extended to steelhead. That would assure that those actions where formal consultation has been concluded (Table 2) would have sufficient requirements to reduce or avoid adverse effects to

steelhead and salmon and their critical habitat, and prevent the actions from being suspended pending completion of consultation.

3) Throughout the upper Columbia River basin ESU and the Snake River basin ESU, all other ongoing Forest Service and Bureau of Land Management actions that may affect steelhead should be assessed via the Level 1 streamlining teams using the National Marine Fisheries Service checklist and matrix of pathways (National Marine Fisheries Service 1996). That process should be amended to review federal actions for take of steelhead. Prior to the review, the checklist and matrix of pathways should be modified as needed by a team from the National Marine Fisheries Service, Forest Service and Bureau of Land Management for habitat features and recommended values that are appropriate for the Snake River basin ESU and the upper Columbia River basin ESU. The revised checklist and matrix of pathways for ongoing Federal actions in both ESUs should be completed approximately 60 days after the BO is issued pursuant to this BA by the National Marine Fisheries Service. Those actions that pass the review shall proceed as proposed; others shall be modified as appropriate.

   For the Snake River basin ESU, already the subject of consultation for salmon, brief BAs should be tiered to those already prepared for various watersheds and they should contain the review of Federal actions for effects to steelhead except for those identified in Snake River basin biological opinions (SBO). For the upper Columbia River basin ESU, not the subject of consultation on salmon, BAs should be prepared following the agreed upon format for salmon, and they should contain reviews for all ongoing federal actions that may affect steelhead; the latter BAs should be completed for the watersheds as shown in Table 6.

Table A1. BAs to be completed for ongoing projects for steelhead consultation.

ESU	Watershed	Lead Unit
Upper Columbia River Basin	Wenatchee	Wenatchee National Forest
	Okanogan	Okanogan National Forest
	All remaining portions	Wenatchee National Forest

It is further recommended that federal actions that are conducted under the 36 amendments to LRMPs (page 11), in addition to PACFISH, be identified clearly and that consultation be appropriate to the effects on steelhead of the amendment. Resulting BAs should be entered into consultation with the National Marine Fisheries Service at the earliest possible date following listing.

4) Special management considerations not previously warranted for salmon are needed for the Selway River, Middle Fork Salmon River and South Fork Salmon River subbasins. This is because a genetically and ecologically unique sub-population of steelhead has been identified in these three subbasins combined with a relatively high density of site specific federal actions which are exceptions to programmatic LRMPs as well as a lack of implementing planned restoration actions. LRMPs contain some special management requirements that should be made more uniform. Specialized management requirements have been previously related to designation of large areas to remain roadless and specialized protection for fish. In addition to previously cited information, the consultation records for federal actions for salmon in the Snake River basin ESU have been utilized to develop the mitigative measures listed below. Those consultation records utilized include emergency consultations on flood and fire effects, recreation effects, timber sale effects, allotment management plan effects and others found in consultation records in the offices of the National Marine Fisheries Service in Boise, Idaho, and Portland, Oregon.

It is acknowledged that there are limitations to the best available science and that these limitations play an important role in actual effects to steelhead from

management actions. Mitigative measures are intended to provide risk avoidance until such time as better scientific information is available.

Federal actions in the Selway River, Middle Fork Salmon River, and the South Fork Salmon River subbasins in their entirety should be subject to the following mitigative measures and are applicable to the jurisdictions of the Forest Service and Bureau of Land Management.

A. Roads

Develop a schedule and prioritize to close, obliterate and revegetate, or resurface as many existing roads as possible. Existing roads in Riparian Habitat Conservation Areas (RHCAs) should receive high priority for treatment. If resurfaced, cover the existing native surface open roads with aggregate or pavement to control erosion and sedimentation; stabilize cut and fill slopes.

Build new roads only to replace existing roads in RHCAs, or directly repair human-caused damage to steelhead habitat in streams.

Do not widen roads by increasing cut and fill slope areas in order to accommodate more traffic and/or larger vehicles than can presently use the road.

Do not open closed and revegetated roads for management purposes unless necessary to repair human-caused damage to steelhead habitat.

B. Riparian Habitat Conservation Areas

In order to define landslide prone areas, utilize methods described by Prellwitz (1994) and Hall et al. (1994), or use at least an equivalent peer reviewed methodology with at least a 90% probability of identifying landslide prone slopes.

C. Fire Management

Emphasize containment and confinement rather than control strategies to manage wildfire.

Use tractors only in the immediate vicinity of private

property or to protect life, as in the construction of safety zones.

Maximize the use of planned ignitions and natural prescribed fire to meet vegetation management objectives.

Only use water sources where screening of fish from water intake is provided or no salmon or steelhead are present.

D. Timber Management

Only use timber harvest methods (such as, helicopters, horses, etc.) that result in low levels of ground disturbance or that avoid adverse effects to steelhead.

Use only existing open roads, without construction of new landings.

Do not harvest in RHCAs.

E. Grazing Management

Manage for natural bank stability of streams using best available data.

Locate holding facilities for domestic livestock outside of RHCAs.

F. Recreation Management

Allow motorized use only on open roads and trails designed for such purposes.

Where steelhead spawning has been documented and where disturbance of spawning fish is likely to occur, close streams or affected reaches to commercial and noncommercial recreational boating and floating in any craft from April to June of each year.

5) It is important that steelhead habitat restoration be accelerated in the Snake River basin ESU. It is recommended that the Forest Service and Bureau of Land Management work cooperatively with the National Marine Fisheries Service, the state agencies and the Tribes to develop priorities and adequately fund restoration.

6) Review effects to steelhead from commercial permits and noncommercial recreational boating and floating for adverse effects to steelhead spawning. Where adverse impacts are reducing steelhead productivity, commercial permits and noncommercial recreational boating and floating should be modified to reduce or eliminate the adverse effects. Review all recreational facilities as ongoing federal actions.

7) Strengthen monitoring and commitment, as needed, associated with PACFISH to insure the strategy is properly implemented. To date the implementation has been inconsistent. Strengthened implementation should include increased emphasis on watershed analysis and the development of a schedule for each unit to complete such analyses in a timely manner.

8) Watersheds within the upper Columbia River basin ESU and the Snake River basin ESU should be treated as key watersheds (as directed by PACFISH) and as designated critical habitat.

9) If adopted, these recommendations should be extended indefinitely, until such time as new, long-term, programmatic direction is adopted by the Forest Service and Bureau of Land Management for both salmon and steelhead.

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APPENDIX 2 Mechanisms to Address Concerns -Complete List

The following five mechanisms were designed by various interagency staff and executives to address outstanding issues after the Biological Assessment (BA) was completed. These mechanisms are linked to reporting requirements identified in section XIV.C., above (Reasonable and Prudent Measures, and Terms and Conditions). Subelement timelines listed below are intended to serve as interagency checkpoints to monitor progress toward achieving the regulatory reporting dates established for each mechanism. The mechanisms are repeated below to facilitate interagency coordination, tracking, and development of Implementation Reports.

Five Mechanisms:

1. The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) shall develop a mechanism for accountability and oversight to ensure PACFISH direction, directions in the Land and Resource Management Plans (LRMP) Opinions, and the BA recommendations (pp 20-24) are fully implemented through a mechanism in addition to Level 1 teams. Interagency collaboration is necessary to ensure a common understanding of expectations.

   a. Provide a process (within 120 days of signature), which includes designation of an Implementation Team, that ensures accountability and full implementation of programmatic aquatic conservation measures at all organizational levels within the Snake River and upper Columbia River Evolutionarily Significant Unit's (ESU) covered by PACFISH.

   b. Establish priority watersheds (within 60 days of signature) for steelhead in order to extend PACFISH direction to steelhead watersheds (Recommendation 1 in the BA) that are not presently designated as priority watersheds for salmon.

   c. Annually (no later than March 1 of each fiscal year), at the USFS Regional/BLM State level and the USFS Forest/BLM District level, review the fiscal year program of work for attainment of fish conservation measures. The action agencies and NMFS will mutually agree on the priority of these actions and identify significant shortfalls in funding or staffing, and potential adjustment(s) in management activities. Mutually develop and implement a strategy when funding or priorities prevent full implementation of the aquatic conservation measures.

d. Implement monitoring commensurate with the level of on-the-ground activities, and provide National Marine Fisheries Service (NMFS) feedback on the effects of activities.

1) Review NMFS' expectations for monitoring in the 1995 LRMP Opinion (section IX.I. and Appendix A-10), when updating the PACFISH monitoring strategy.

2) Activate the PACFISH interagency monitoring subgroup (within 120 days of signature) to develop a monitoring strategy including a range of monitoring alternatives commensurate with anticipated land management activity levels, funding, and staffing levels.

3) Improve implementation of PACFISH (eg. expand regional/state level USFS/BLM line officer involvement in PACFISH implementation oversight and review process, etc.).

2. The USFS and BLM shall complete prior commitments in PACFISH, LRMPs and this Opinion to meet the direction in the BA recommendation 7. Use the findings from the PACFISH reviews, the BA, and this opinion to develop solutions.

Prior commitments to be completed include:

a. Improve and monitor grazing strategies to meet PACFISH standard GM-1. Adaptive management information is generally lacking to determine if grazing strategies are meeting PACFISH riparian management objectives (RMOs).

1) Through interagency coordination develop (e.g., at the watershed or subbasin scales), prior to the 1999 field season, stratified monitoring plans. Stratification should be based on grazing intensity and potential for adverse effects to listed chinook salmon, steelhead, and designated critical habitat. Develop these plans by subbasin to maximize the utility of monitoring information through a coordinated effort and a defensible sampling design. These plans shall be developed by an interagency group (such as the PACFISH Implementation Team, Monitoring Subgroup). The

interagency group should establish objectives for the monitoring plans in accordance with PACFISH. Goals for the plans should include maximizing the effectiveness of limited monitoring funds, identifying appropriate scales and levels of monitoring necessary to determine if allotments are meeting PACFISH direction, allowing for flexibility as funding and activities change, and identifying how monitoring results should be used to make management adjustments.

2) Monitoring plans developed per 2.a.1, above, will be fully implemented in 1999. Full implementation means that monitoring schedules will be developed and implemented beginning in the 1999 grazing session. This requirement applies to ongoing as well as new range activities. If monitoring schedules cannot be followed, an alternative monitoring approach will be developed and subject to approval by the interagency teams outlined in 1.a and d. If an alternative monitoring approach is not agreed to in a timely fashion, the matter will be elevated for executive resolution. Until interagency agreement is reached on the alternate monitoring plan, grazing would only be permitted that has been determined by the appropriate Level 1 team to be not likely to adversely affect listed species or designated critical habitat.

b. Road Evaluation and Planning (PACFISH standards RF-2 and RF-3). Implementation of these existing standards in PACFISH is necessary to understand and begin reducing impacts from roads on streams with habitat for Endangered Species Act (ESA) listed and proposed fish. The items below are the minimum required to fully implement PACFISH RF-2 and RF-3 in a timely manner.

1. Using existing information and road definitions, provide NMFS with road inventories on the management units in the areas of the five ESUs (within 120 days of signature of this Opinion). This information should include a description of road definitions and survey methodology used. Missing information will be provided to NMFS within two years after signature of the Opinion.

2. Collaborate with NMFS (and USFWS if available) in developing multi-year road restoration strategies for priority watersheds. Restoration strategies will identify key processes needing attention, prioritize key locations and project types, address implementation and scheduling issues, and provide preliminary cost estimates. Subbasin assessments and watershed analyses will be the primary process for integrating and interpreting amended road information, inventories, and other potential information.

3. Annually update the road inventories, including a reconnaissance protocol for identifying, recording, and prioritizing new problems as they arise.

c. The USFS and BLM will conduct biannual programmatic reviews and/or project bundling by watershed or subbasin. Field managers working with the Level 1 teams will programmatically review actions or bundled projects at least every two years by January 15, of every other year. A key component of this review will be gathering the best available information to verify and update the environmental baseline. Understanding of the environmental baseline is essential to provide the fundamental context for reviewing programs and bundled actions. Programmatic reviews and project bundling will enable managers to better evaluate overall risks to listed and proposed fish and their important habitats on a broader range of activities, and provide the crucial ability to step-back from the project-by-project evaluations that now dominate the system.

By January 15, 1999, the USFS and BLM will group, analyze, and submit (by watershed) activities proposed for FY 1999 and 2000 and bi-annually thereafter. This shall be accomplished at a scale at least as fine as section 7 watersheds (as per commitment in the March 1992, Interagency Agreement) already delineated for Snake River salmon and wherever possible coordinated with FWS bull trout delineated watersheds. To meet this commitment, section 7 watersheds will be delineated for the upper Columbia River basin ESU. Individual projects may be considered on a case-by-case only to meet unforeseen program and public needs.

3. Findings from the Interior Columbia Basin Ecosystem Management Project (ICBEMP) and other research reveal that some of the highest quality habitat for anadromous fish occurs

in unroaded and low density roaded areas. Therefore, it is important to conduct a comprehensive review of existing unroaded and low density roaded areas throughout the basin and determine their importance for the long-term conservation of anadromous fish stocks. The assessment will enable managers to determine what level of habitat protection is needed for these areas. It will serve as the foundation of a coherent anadromous fish conservation strategy based on the protection of existing high quality habitat with the necessary connectivity between these areas; and it will enable managers and Level 1 teams to evaluate individual projects in the context of this large scale assessment, and to develop multi-year restoration priorities.

The implementation team described in mechanism 1 will select a team of agency technical experts and research scientists to guide this assessment to be conducted for mechanism 3. The assessment shall include:

a. Descriptions, locations, and maps of unroaded and low density roaded areas and existing information on the relative habitat value of those areas for anadromous fish. Unroaded and low density roaded areas shall include designated wilderness, RARE II areas, or other unroaded areas identified in Forest and Resource Management Plans, Outstanding Resource Waters, and information contained within the scientific assessment for ICBEMP.

b. Existing management direction will be summarized for each of the areas identified above, item a (items a.& b. should be completed by October 1, 1998).

c. The team of scientists and agency experts will review this information and make recommendations to senior level managers. Those recommendations and options on future management of these areas shall, at a minimum, address the following in relation to recovery and conservation of anadromous fish:

1) Need for additional habitat protection.
2) Relative risk (near and long-term) of developmental activities.
3) Priorities for subbasin assessments or watershed analyses.
4) Connectivity between these areas.
5) Restoration priorities.

The above actions shall be completed prior to March 1, 1999, to enable use of resulting information in planning and evaluating 1999 field season projects. Proposed projects requiring road construction in any of these unroaded or low density roaded areas, will be considered to have insufficient analysis for the completion of section 7 consultation and will not be forwarded to Level 1 teams until this assessment has been completed.

d. If the team of scientist and agency experts recommend additional habitat protection beyond existing LRMPs for any BLM or National Forest area, a mutually agreed upon strategy will be developed by September 1, 1999, to provide that protection.

4. The USFS and BLM shall, in a manner consistent with section 7(a)(1), exercise their existing authorities on land management programs with a pattern of adverse effects. Section 7(a)(1) provides:

?The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act.”

Consistent with section 7(a)(1), maximize use of existing authorities to protect critical habitat from activities associated with laws that may conflict with ESA, such as ANILCA and Ditch Act (standard LH-3), mining laws (MM-1 through MM-6), etc. The objectives of this term and condition are to reduce adverse effects from project-specific activities by fully incorporating existing plan-level direction into project-level planning, reduce the number of project-level formal consultations, and facilitate section 7 consultations.

5. The USFS and BLM, in cooperation with NMFS, will develop and implement strategies that will integrate and coordinate a wide range of protection, restoration, and evaluation measures to expeditiously achieve restoration and conservation objectives in priority watersheds. The USFS and BLM shall develop and implement these strategies to fulfill

recommendations 4, 5, and 7 contained in the BA, and as outlined below:

a. Recommendation 4 - Special management considerations for the South Fork Salmon, Middle Fork Salmon and Selway River subbasins. Implementation of these special management area requirements will be ensured by consultation streamlining and the accountability mechanism identified in mechanism #1.

b. Recommendation 5 - Accelerate restoration. By March 1, 1999, the USFS and BLM shall develop, in cooperation with NMFS, multi-year strategies to accelerate restoration of habitat for listed anadromous fish in the Snake and Upper Columbia River basins. These multi-year/multi-scale restoration strategies shall:

1) Be dynamic documents modified annually to reflect priorities and opportunities determined through watershed analyses;
2) Include project-specific information, however, they will be developed at watershed, subbasin, or basin scales;
3) Incorporate road restoration information from mechanism #2;
4) Incorporate restoration opportunities resulting from actions in mechanism #3; and
5) Serve as the source for implementing restoration projects in the 1999 and subsequent annual field seasons.

c. Recommendation 7 - Strengthened implementation of PACFISH, including increased emphasis on completing subbasin and watershed analyses. Within 90 days following the issuance of this Opinion, the USFS and BLM shall submit to NMFS a schedule for the completion of at least one watershed analysis per management unit (National Forest and BLM Resource Area) per year beginning in 1999 and each year thereafter. The analyses shall follow the protocol in the 1995 Federal Guide for Watershed Analysis and any updates to that Guide.

Prioritization and completion of subbasin-scale assessment is a critical action. Among other benefits, subbasin information provides the perspective necessary to determine which watersheds should be prioritized for subsequent analysis. Until experience is gained in conducting these

subbasin analyses each management unit will be expected to complete a minimal number. Once the analytical expertise is developed, the assessment pace should be accelerated. This subelement will be coordinated with actions identified in mechanism #1 and mechanism #5.d.3., below.

d. Long-Term Aquatic Conservation Strategy. In the event that ICBEMP may not be implemented by the year 2000 field season, it will be necessary to have a long-term strategy in place for the conservation of anadromous fish. The components of that strategy will include:

1) Basin Review. By December 15, 1999, the USFS and BLM, in coordination with NMFS, shall initiate a review of the Upper Columbia River and Snake River Basins. The products of this review shall include:

a) A delineation of migration corridors, metapopulations, and subpopulations of listed salmon and steelhead;
b) Subbasin priorities for further review based on importance for, and level of threat to listed species and critical habitat from continuing management activities; and
c) Determination if other subbasins warrant the precautionary measures established for the Selway River, South Fork Salmon River, and Middle Fork Salmon River subbasins (BA recommendation #4). If a determination is made that other subbasins warrant further protection, a strategy to provide the necessary protection will be developed within 6 months of completion of the basin review.

2) Subbasin Assessment. By May 1, 2000, the USFS and BLM, in coordination with NMFS, shall complete one subbasin assessment per management unit; and at least one per management unit per year beyond 2000. Subbasins will be chosen for assessment based on the priorities determined in the basin review. These analyses will adhere to protocols and provide the products mutually agreed upon by the USFS, BLM, and NMFS. NMFS present expectations for protocols for these subbasin assessments include: a) South Fork Clearwater River assessment methods and procedures; b) Procedures developed by Kerry Overton, Rocky Mountain Research Station; or c) Other jointly agreed upon

procedures.

3) Management Plans. Goals and objectives identified in subbasin analyses need to be incorporated into action plans at the watershed scale. This subelement should be coordinated with recommendation 7 and mechanism #5.c., above.

APPENDIX 3 BA Effects Summary

Effects Identified in BA and Review of 1995 LRMP Opinion

The BA discusses the effects of the LRMPs on steelhead, and also draws a parallel between the habitat needs of salmon and steelhead. The BA uses the agencies' prior section 7 consultation record in evaluating the effects of actions on salmon and designated critical habitat as a means of identifying improvements in the project planning process which are needed for steelhead. Key recommendations proposed for steelhead in the BA also would apply to chinook salmon in the Snake River basin, because the species are generally found in the same streams and have similar biological requirements.

The BA noted that USFS and BLM had not updated the 57 watershed BAs which had been the basis for planning actions to meet ESA requirements for listed salmon. The LRMPs require that actions not retard or prevent attainment of RMOs. To determine if this standard is being met, it is necessary to understand environmental baseline conditions in watersheds and combined effects of actions on various watershed functions. Without an update of the watershed BAs or some other comprehensive understanding of environmental baseline conditions, monitoring of actions carried out under the LRMPs would be inadequate to evaluate effects of the actions, and would not identify needed changes in land management methods. Environmental baseline information should be updated for areas previously covered for listed salmon, and for steelhead habitat which was not previously covered (most of the Clearwater River basin).

The BA also noted that, while PACFISH appears to establish some strong standards for eliminating or minimizing adverse effects on listed anadromous fish, other amendments of some LRMPs have effectively increased the risk to those species. To assist in preparing the BA, Forest Supervisors and BLM Area Managers in the two subject ESUs were questioned to determine the approximate nature of deviations from plan-level direction in PACFISH. All National Forests and all BLM Resource Areas responded. The National Forests reported a total of 36 amendments (zero to 19 amendments per National Forest), other than PACFISH, that may effect listed fish. Effects of these amendments vary widely, but include alterations in RHCAs that do not conform to recommendations in PACFISH, causing increased risk of adverse effects on listed fish. Similarly, amendments provide for increased risk due to sedimentation and petroleum spills where LRMP direction prohibited those risks

in certain subbasins. The BLM did not report any LRMP modifications, other than PACFISH, that may effect anadromous fish.

Other effects on steelhead and salmon may occur because of hydropower development, mining, and commercial and noncommercial recreational boating and floating. Effects include, but are not limited to, alteration of instream flows, sedimentation, pollution by toxic chemicals, and direct disturbance of fish. The BLM Area Managers indicated that they responded to all proposed mine development and hydropower development, but had no administration of commercial and noncommercial recreational boating and floating to avoid take of spawning steelhead. The Forest Supervisors indicated that they had responded to all proposed mine development, all but one hydropower development, and had three units with administrative procedures in place that prevent take of spawning steelhead by commercial and noncommercial recreational boaters and floaters. Spawning steelhead are subject to the types of effects from human disturbance described in the consultation record on spawning salmon. The BA authors stated that they and others have observed that spawning steelhead in the South Fork Salmon River are easily displaced or disturbed by people. Water conditions during spawning are not sufficient to prevent such disturbance. The BA concluded that there are effective administrative procedures which consider steelhead with the exception of commercial and noncommercial recreational boating and floating. The latter is not effectively administered with plan-level direction to avoid take of spawning steelhead.

The BA found that many LRMPs affect steelhead and salmon habitat by providing restoration objectives and implementation schedules. If these schedules are not met, or objectives are not achieved then the species are affected. A review of steelhead habitat restoration accomplishments showed a high degree of variability among land management areas. The BLM reported that 100% of the mileage of streams planned for restoration were on schedule. National Forests within the Snake River basin ESU reported steelhead habitat restoration was not planned in most of the Clearwater River subbasin. In the remainder of the Snake River basin ESU, National Forests reported that about 90% of planned steelhead habitat restoration has not been completed. These units reported insufficient funding or low priority as the reason for restoration shortfalls. From these reports the BA concluded

that many units were allowing adverse effects caused by existing conditions to continue by not completing scheduled restoration. In other words, steelhead production has been reduced due to delays in implementation of restoration of steelhead habitat.

The BA explained that, while PACFISH in effect has become a longer-term aquatic strategy, it lacks the broad-scale planning and restoration scheduling which are necessary parts of a long- term strategy. The PACFISH amendment was designed to maintain the health of watersheds containing habitat for anadromous fish, including steelhead, on USFS and BLM administered lands (Williams and Williams 1997). In February 1995, LRMPs of both agencies were amended or modified by PACFISH for an 18-month period pending development and implementation of long-term aquatic conservation strategies developed by both agencies in cooperation with other Federal agencies through the ICBEMP. PACFISH was implemented to halt declines in anadromous fish habitat on Federal lands and to maintain long-term management options prior to completion of geographically specific EISs as part of ICBEMP. Delays in completion of the EISs have resulted in continued implementation of PACFISH beyond the envisioned 18-month period. Without key elements of a long-term strategy in place under PACFISH, planning of actions has lacked a comprehensive and coordinated approach to analyze and restore watersheds to improve survival and enable recovery of the listed anadromous fish species.

The BA reports that implementation of PACFISH has been inconsistent. The USFS and BLM, with the assistance of staff from NMFS and USFWS, monitored and reported on implementation of PACFISH during 1995 and 1996 (PACFISH Review Team 1996 and 1997). In general, the reviews found that BLM field offices exhibited a moderate to high understanding and commitment to implementation of PACFISH; whereas understanding, commitment and implementation among USFS offices were more mixed (Table 4). In particular, while the commitment of staff to PACFISH was rather high, documentation of implementation was consistently low for both agencies. Although some improvement was observed during 1996, problems of proper implementation persisted. Implementation problems have resulted in adverse effects on steelhead, salmon, and their habitat from increased solar radiation from timber harvest in RHCAs and reduced streambank stability and increased stream temperatures from grazing allotments (PACFISH Review Team 1997). Implementation

and effectiveness monitoring, which was not initially considered to be a critical component of PACFISH because of the limited 18-month implementation period, have become more important as the EISs have been delayed and the duration of PACFISH extended.

Similarly, watershed analysis was not broadly encouraged during the initial 18-month period although it was a primary component in the development of PACFISH (Williams and Williams 1997). Several watershed analyses have been completed over the 3-year timeframe of PACFISH; however, these analyses were usually generated to support previously planned actions rather than used as the basis for planning actions, as PACFISH intended.

In addition to the inconsistent implementation of PACFISH, the authors of the BA subsequently found inconsistent implementation of NMFS' 1995 LRMP Opinion. The 1995 Opinion established guidelines to be followed for actions to avoid jeopardy; yet, these guidelines have not been followed in the planning of various projects (October 28, 1997, memorandum from Jack Williams, BLM, to Russ Strach, NMFS; refer to Appendix 3). The BA authors noted inconsistent application of the guidelines was due to data limitations, interpretation of the guidelines as optional, lack of a comprehensive and quantitative cumulative effects evaluation process, and administrative limitations. For instance, activities were allowed to proceed in some areas without full knowledge of implications to achievement of RMOs. RHCA widths were modified in some instances without sufficient data to support the modifications. Also, activities were planned in priority watersheds which had more than a ***de minimis*** risk of hindering the recovery of watershed functions (e.g., salvage logging in the South Fork Salmon River subbasin under the Rescissions Act). Monitoring was found to be inadequate to assess the effects of some of the higher risk activities. The BA authors also found that NMFS' 1995 LRMP Opinion guidance for the longer term strategy has not been fully incorporated in the development of that strategy (ICBEMP DEIS's). Refer to Appendix 3 for other examples of inconsistent implementation of the 1995 LRMP Opinion.

Table 4. General Summary Of Findings For Eight Subjects After 1995 PACFISH Field Reviews On Selected National Forests And BLM Districts (PACFISH Review Team 1996).

(L=Low, M=Medium, H=High success, NA=Not assessed, ?=Unable to determine based on field observations and information provided.)

	Salmon/Challis	Nez Perce		Clearwater		Ochoco/Prineville	Umatilla/Baker	Cottonwood	Los Padres	Boise	Payette	Sawtooth
Date Reviewed	September 12-14 95	July 27-	Oct 1-4 96	Sept 21-	Oct 1-	October 3-5	October 24-26	November 1-2	November 8-9	September 9-12	September 9-12	September 9-12
Subject	USFS / BLM	USFS		USFS		USFS / BLM	USFS / BLM	BLM	USFS	USFS	USFS	USFS
Line/Staff Understandi	M / H	M	M+	H	H	M / M	L / H	H	M	L / M	L / M	H
Commitment	M / H	M	M+	M	H	M / H	M / H	H	M	M	M	H
a. Screening	M / H L / L	H L	NA M	H M	NA M+	L / M L / L	M / M L / L	H M	M L	NA L / M	NA L / M	NA H
Mod. Projects	NA / H	L	NA	M	NA	L / M	M / M	H	?	NONE OBSERVED	NONE OBSERVED	NONE OBSERVED
Appl. of S&Gs	NA / NA	NA	NA	NA	NA	NA / NA	NA / NA	NA	NA			
Doc. Of Changes	L / L	L	M	L	M	L / H	L / L	L	M	L / M	L / M	H / M
Use of WA	L / L	L	L	L	L	H / L	L / L	L	H	L	L	L
Impl. Monitor	? / M	L	H	L	H	L / L	L / L	M	L	H	H	H

The BA discusses actions which have received formal consultation over the last three years as examples of the PACFISH-amended LRMPs producing actions with adverse effects on listed species and designated critical habitat. The BA noted that 4 of 12 actions[7] requiring formal consultation over the last three years were within the Middle Fork Salmon River and South Fork Salmon River subbasins, areas which have been found to be unique strongholds of wild steelhead (Lee et al. 1997). Also occurring within these subbasins were: (1) one hydropower project implemented within steelhead habitat without requirements by USFS to protect steelhead; (2) three salvage timber sales of several thousand acres that may effect salmon and steelhead; (3) lack of completion of about 90% of the restoration planned for anadromous fish habitat; and (4) lack of effective administration of commercial and noncommercial recreational boating and floating to avoid take of spawning steelhead. Effects of combined actions include, but are not limited to: sedimentation, increased risk of exposure of steelhead and salmon to toxic chemicals, decreased wood recruitment within RHCAs, altered instream flows, direct disturbance of spawning fish, and lack of implementation of restoration of steelhead and chinook salmon habitat.

Summary of Effects Identified in BA and Review of 1995 LRMP Opinion

The BA described the following concerns with the plan-level direction under which actions that may effect steelhead and salmon continue to be planned:

1) Plan-level direction has not been effective in maintaining consolidated, current information on environmental baseline conditions;

2) Some LRMPs have been amended in ways which reduce the effectiveness of PACFISH;

3) LRMPs lack specific direction for actions to avoid adverse effects on salmon and steelhead from commercial and non-commercial recreational boating and floating;

[7] Some of these consultations covered groups of actions.

4) Anadromous fish habitat restoration objectives established in the LRMPs are not being met in most areas;

5) PACFISH lacks key components of a long-term conservation/restoration strategy, and yet will likely be implemented for a total of four or more years without those components;

6) Implementation of PACFISH and 1995 LRMP Opinion Guidelines to Avoid Jeopardy has been inconsistent for various reasons; and

7) Under PACFISH, few watershed analyses have been completed and used as a basis for planning actions.

The BA demonstrated how some of these shortcomings in plan-level direction have resulted in actions likely to adversely affect chinook salmon, steelhead, and their habitat in important watersheds for both species.

References

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APPENDIX 4 Consistency with LRMP Guidelines

Appendix 4 - Memorandum on Consistency with LRMP Guidelines(October 28, 1997, Memorandum from Jack Williams, BLM, to Russell Strach, NMFS)

October 28, 1997

MEMORANDUM

To: Russ Strach, NMFS, Boise

From: Jack Williams, BLM, Boise

Subject: LRMP Expected Outcomes

This responds to expectations are described the National Marine Fisheries Service in the LRMP Biological Opinion and the PACFISH extension letter. These responses are primarily the same as provided by FAX to National Marine Fisheries Service on October 9 with only minor editing by myself.

These responses include comments from Steve Kozel on broad-scale questions, and from Dave Burns, Paul Boehne and I on project and watershed-scale questions. Dave Burns sent a draft of his comments to Lee Jacobson of the Boise NF and Scott Russell of the Nez Perce NF for review. He tried to incorporate their thoughts as well. Paul Boehne surveyed staff of the Wallowa-Whitman and Umatilla National Forests for implementation of the LRMP Opinion for site specific projects. These responses are based on incomplete surveys but are intended to be representative of the project specific and watershed specific projects. I also report on relevant observations from the PACFISH Implementation Team.

I. Relative to long-term strategy development.

The DEISs were released to the public in June, 1997. The public comment period will end February 6, 1998. The Final EIS is expected in late summer or early fall 1998. The NMFS has been a partner in development of the DEISs and provided input on the selection of the preferred alternative.

I.1. Relative to long-term conservation.

The Forest Service and BLM propose to develop and implement a

coordinated, scientifically sound, ecosystem based management strategies to achieve the following: 1) restore and maintain habitats of plant and animal species, especially those of threatened, endangered, and candidate species (this would be done primarily by moving toward desired ranges of landscape conditions at a sub-regional and regional ecosystem basis); 2) provide long-term management direction to replace interim strategies such as PACFISH; 3) provide consistent direction to assist federal managers in making decisions at a landscape level within the context of broader ecological considerations; and 4) emphasize adaptive management over the long term.

I.2. Relative to guidance in development of EISs.

Ecological goals, objectives, and guidelines identified in the LRMP Biological Opinion and the preliminary draft Snake River Salmon Recovery Plan were considered in development of the alternative management strategies. These elements or modifications of these elements can specifically be found in the seven alternatives under Desired Ranges of Future Condition, Objectives, Standards, RMOs, and Riparian Conservation Areas (RCAs).

I.3. Relative to geographic application of objectives.

Currently, aquatic and riparian management objectives found in Alternatives 3 through 7 apply to all Forest Service and BLM administered lands.

I.A. Relative to overall goal of strategy.

One of the five goals for Alternatives 3 through 7 is to contribute to recovery and delisting of threatened and endangered species. To accomplish this goal, each alternative emphasizes maintenance and restoration of aquatic and riparian functions and processes that create or sustain habitat for aquatic species. Each alternative differs in strategy and risk to aquatic species and habitat.

I.B.1. Relative to objectives being same as in PACFISH.

Each alternative contains aquatic and riparian management standards that are intended to prevent further degradation to aquatic habitat. These standards apply to all Forest Service and BLM administered lands regardless of aquatic species. Management activities must comply with these standards. Some

alternatives vary in the level of management flexibility embedded within standards.

I.B.3. Relative to providing priority to high-quality watershed network.

The aquatic scientific assessment identified and ranked subbasins (4th field hydrologic units) according to the integrity of species and habitats. Typically these subbasins of highest integrity contained a high abundance of aquatic species strongholds where connectivity was unimpeded. They also identified subbasins where aquatic strongholds were numerous but conditions could be improved through restoration to allow fuller expression of life histories. The EIS team used this information in developing management objectives for each of these subbasin types for Alternatives 3 through 7 that emphasize conservation and restoration.

I.B.4. Relative to need to provide high-quality over time.

The scientific assessment of the project area described historic and current conditions for natural disturbance regimes, changes in current conditions due to anthropogenic forces and project future ecosystem trends. Based on this information and issues developed through public scoping, the EIS developed alternatives using different management strategies to maintain and restore long-term forest, rangeland, aquatic, and riparian ecosystem health.

I.B.5. Relative to short-term strategies.

The PACFISH strategy has been implemented by BLM and Forest Service to prevent further declines and maintain long-term options. PACFISH implementation has not precluded options.

I.B.6. Relative to items for comprehensive strategy.

The long-term strategies within the DEIS alternatives contain elements identified on page 68 and 69. The alternatives vary these elements based on the theme of the alternative. In addition some items identified as complete have been modified in some alternatives based on scientific information and issues.

I.C. Relative to consistency of ecological goals.

Ecological goals or modifications are found under the Desired Range of Future Condition for the various alternatives. The Desired Range of Future Condition is a projection of long-term condition of the land expected to result in 50 to 100 years if management objectives are achieved.

I.D.1.Relative to implementation of RMOs.

Proper implementation of PACFISH RMOs is a primary question during all PACFISH field reviews and implementation reports. The PACFISH Implementation Team has prepared a questionnaire that is to be completed if RMOs are modified. The Questionnaire asks about the quality of data available to make the change, rationale for the change, etc. In general, most units used default RMOs during the first year of PACFISH and we have seen a greater tendency to modify RMOs during subsequent years based on results of watershed analysis and site specific analysis. Nonetheless, default objectives are widely used.

RMOs have been known to be implemented where sufficient data have been collected to know habitat condition and trend. However, sufficient data have not been available for some ongoing projects, especially small scale activities like special use permits. Some floods and fires have required short term emergency response that precluded timely inventory of changed conditions. For example, road repairs to provide reasonable access to private property after the January 1997 storms did not allow time for data acquisition so that data supported reconstruction of some road segments; an example of the latter is for the Payette National Forest road up Lake Creek, a Salmon River tributary near Riggins, Idaho. The expectation that data would be available, especially for an 18 month PACFISH implementation is probably not realistic.

The Nez Perce National Forest continues to use Forest Plan desired future condition values similar to RMOs. They have not changed to use the RMO values based on their assumption that the locally generated numbers are more accurate. No analysis of this assumption has been conducted.

For the Wallowa-Whitman and Umatilla forests, RMO's have been implemented on a project specific and watershed specific basis. RMO's have been adjusted using site specific data on a few projects and have been reviewed and agreed to by the Level 1 streamlining teams.

I.D.2. Relative to degradation of RMOs.

In general, areas where existing conditions exceed default RMOs are managed as roadless, wilderness or other special management category. With the exception of some roadless areas affected by salvage timber harvest, RMOs have not been degraded even where they exceed PACFISH standards.

Conditions were degraded by some actions. For example, at the Stibnite mine area on the Payette National Forest, the Garnet Creek pit was mined within 50 feet of a perennial stream. This resulted in a landslide entering the RHCA. Similarly, sheep grazing on the Payette National Forest in the Lake Creek, Secesh River, watershed occurred in the immediate vicinity of the stream and some sediment was visibly added. On the Nez Perce National Forest predicted or modeled habitat degradation was shown for the Cove/Mallard timber sales and Hurley Creek road access. Other examples exist and will be cited later. So long as the verbiage is a “should” rather than a “will”, relatively more exceptions can be expected. Exceptions have occurred due to permit violations, administrative error and limited discretion on the part of the Forest Service.

For the Wallowa-Whitman and Umatilla forests, RMO's have not been degraded. Where changes have been made to RMOs the changes are based on site specific data that represents the best known conditions (near potential) for that stream type in that specific subwatershed. The data from stream surveys were assessed using the techniques of McKinney et al. (1996).

I.D.3. Relative to insuring that actions do not retard RMOs.

So long as the verbiage is a “should” rather than a “will”, relatively more exceptions can be expected. Exceptions have occurred due to permit violations, administrative error and limited discretion on the part of the Forest Service.

For Wallowa-Whitman and Umatilla forests, all proposed actions were designed to ensure actions did not degrade or prevent attainment of RMOs.

I.E.1. Relative to RHCA management.

Alternatives 2, 3, and 7 of EISs have similar Riparian Conservation Areas as PACFISH. Riparian Conservation Areas in Alternatives 4, 5, and 6 differ from PACFISH. Each alternative contains management objectives and standards for conservation and restoration of Riparian Conservation Areas.

I.E.2. Relative to reducing RHCA widths based on site specific analysis poses a risk.

There is broad agreement that risk increases without watershed analysis unless actions are very limited in scope and excellent local knowledge is available. However, because of the time-frames needed for data acquisition combined with administrative limitations cited above, it is not always possible to conduct watershed analysis. Exceptions occur due to mines, emergency actions related to fire and floods, access to private property, and exceptions occur for other similar reasons.

Most ICBEMP alternatives vary on the process for modification of Riparian Conservation Area widths. For example in Alternative 4 widths can only be modified after completion of ecosystem analysis at the watershed scale while in Alternative 6 site specific analysis can be used to modify widths in some areas.

PACFISH allows for modification to RHCA using watershed analysis or site-specific information. In general, information at both the watershed and site scales are needed. Watershed analysis places the broader context on RHCAs and defines whether changes are appropriate and in which direction (reducing or expanding RHCAs). Site-specific information is needed to define precisely where the new RHCA boundaries should be.

On the Wallowa-Whitman and Umatilla forests, RHCA widths have not been reduced without a watershed analysis and a site specific analysis.

I.F.1. Relative to size of priority areas.

For broadscale response see item I.B.3.

I.F.2. Relative to identification of priority areas.

For broadscale response see item I.B.3. These criteria were not explicitly used in the development of subbasin categories. Instead, aquatic species presence, population strength, and native species assemblages information and general knowledge about subbasin condition was used in developing the categories. Habitat condition information was not available for all areas within the project area.

I.F.3.A. Relative to RMOs risk should be minimized.

True risk minimization seldom occurs. In practice the minimization of risk has been limited by jurisdiction and timing of administrative actions as cited above. For example, mitigation measures were provided for fuel haul to the Stibnite mine area as part of reasonable and prudent alternatives resulting from consultation; these measures have apparently been successful at avoiding a large scale fuel spill, but enabled other land disturbing actions. An example of the latter are those actions that resulted in “show cause” letters from the Forest to the mine in September 1997, and an alleged violation of water quality regulations affecting critical habitat in 1997.

Another mechanism that does not result in literal minimization of risk are those decisions to take risk in spite of existing guidance. The clearest examples occurred due to salvage logging under the Recision Bill in the South Fork Salmon River watershed. Forests decided to log and support that logging with fuel haul. True risk minimization would have precluded these actions under Forest Plan direction. The result was a decision and project implementation contrary to absolute risk minimization. At least two accidents occurred; one accident resulted in a truck going into a perennial tributary of Warren Creek and fuel spill; another accident resulted in a truck directly entering the South Fork Salmon River south of Goat Creek. In neither case lethal effects were observed, but sub-lethal effects were not monitored. Fuel haul enabled salvage logging within areas of subsequent channelized erosion or debris torrents in the lower South Fork Salmon River; this removed large durable tree boles from those areas decreasing long term stabilizing effects. In addition, the road mileage

scheduled to receive sediment reduction as mitigation has not been completely treated due to timber sale purchasers claiming the “prudent operator concept.” Some reduction in risk to salmon and steelhead was provided by mitigation measures including Jersey barrier installation, and road graveling, but all increased risks due to project implementation could not be avoided. Data limitations, administrative uncertainty and uncertainty of RHCA definition contributed to increased discretionary risk taking.

For the Wallowa-Whitman and Umatilla, risks have been minimized and good habitat maximized through mitigation and avoidance measures in project proposals, Level 1 streamlining consultation, and implementation of those proposals.

For the broadscale, the management objective for Category 1 subbasins under Alternatives 3 through 7 is conservation while in Category 2 subbasins it is conservation and restoration. Management standards apply to all subbasin categories and are intended to minimize adverse affects to aquatic and riparian resources. In addition, ecosystem analysis is required in Category 1 subbasins prior to management actions that require an Environmental Assessment or Environmental Impact Statement.

I.F.3.B. Relative to reducing risk from aggregated land use.

The DEISs in ICBEMP do not contain a quantitative cumulative effects process or direction for its development.

I.F.3.C. RMOs actions known...should be avoided.

For the Payette, Nez Perce and Boise forests, management actions known to cause direct negative affects to listed salmon have been minimized. Most management actions are reviewed and modified as needed so that a “not likely to adversely affect” determination is made. Only 17 site-specific formal opinions have been conducted and very few of these have resulted in jeopardy determinations.

For the Wallowa-Whitman and Umatilla, actions known to cause direct or indirect affects have been avoided. This has been carried out through site specific project planning mitigation and avoidance and implementation of those projects.

Also, see prior discussion for F.3.A.

I.F.4.A. Relative to changing RMOs only if watershed capabilities cannot support initial values.

Few watershed analyses have been conducted in Idaho. Data limitations described above have not resulted in reduced RMO values.

For the Wallowa-Whitman and Umatilla forests, RMO values were only changed after a WA was completed and the site specific streams in subwatersheds were assessed using the technique as described by McKinney et al. (1996) and reviewed by the Level 1 streamlining team.

I.F.4.B. a through d. Relative to additional RMOs in priority watersheds.

Data limitations described above have not resulted in reduced RMO values in Idaho.

For the Wallowa-Whitman forest, a fine sediment standard of 20% was adopted. Site specific projects identified reduction of sediment delivery as a major issue and mitigation and avoidance measures identified to reduce sediment delivery. The Umatilla National Forest does not use a fine sediment standard.

For the Wallowa-Whitman and Umatilla forests, cobble embeddedness has been adopted at 30% in rearing habitat. Monitoring has taken place which measures the embeddedness each year to assess this RMO using both ocular estimate through the Level 2 stream surveys and direct measurement. Width/depth ratios have been stratified by Rosgen channel types and adopted. This has been done for project specific streams and through some watershed analyses. Streambank stability has been adopted at 90% stable stream banks.

The additional RMOs identified in the LRMP BiOp were included in Alternative 7 of ICBEMP except for the width/depth ratio recommendation and the existing lower bank angle measure. Some of these recommendations were also included in other alternatives. The project also developed RMOs from science assessment data and displayed these values as an option for Alternatives 4 and 6. Work is in progress to better define

scale specific RMOs, processes for modification, and use criteria. As currently defined in the DEISs, RMOs would apply to all lands administered by the Forest Service or BLM.

I.F.5.A. Relative to priority watersheds should have “de minimus” risk.

The Biological Assessment points out that this has not occurred. At least half of the Biological Opinions for federal actions that were likely to adversely effect listed salmon occurred in priority watersheds. “De minimus” risk refers to those actions that are not likely to have adverse effects and to which NMFS concurs.

For the Wallowa-Whitman and Umatilla forests, actions have been planned and implemented to pose no more than a de minimis risk of adverse effects to listed salmon. Actions submitted to Level 1 teams have a determination of NLAA with mitigation or avoidance measure planned into projects to avoid adverse effects.

Each ICBEMP alternative contains aquatic and riparian resource objectives and standards that are intended to conserve and restore watershed and aquatic habitats and minimize short term adverse effects. These management requirements apply to all Forest Service and BLM administered lands. In addition, in all action alternatives (3-7) ecosystem analysis at the watershed scale is required prior to project implementation in Category 1 subbasins. Ecosystem analysis is also triggered for other aquatic issues in the action alternatives. The extent of ecosystem analysis varies by alternative.

I.F.5.B. Relative to aggregated actions should have a high probability ...

On the Wallowa-Whitman and Umatilla forests, where watershed analyses have been completed and the cumulative effects analysis for projects have been completed, the assessment has been made

that demonstrates a high probability that high quality habitat will be maintained, expanded and reconnected.

Also see above.

I.F.5.C. a through d. Relative to guidelines that should be followed.

On the Wallowa-Whitman and Umatilla forests, guidelines for mining, timber and roads have been implemented.

Also see above.

I.F.5.C.d.ii. Project staff provided NMFS with a map of potentially unroaded areas greater than 1,000 acres. This map was based on projections of road densities from mid-scale sub-sampling information. No items were included on the map. This map should be used with caution since it is based on estimates of road density. Proposed road construction in the next two years was not evaluated because the project had no information to base any projections. (I believe Jeff Lockwood was given a copy of the map. This needs to be confirmed. This item is also a broadscale and project issue.)

For the Wallowa-Whitman and Umatilla forests, roadless areas have been evaluated through Watershed Analysis. Watershed Analysis has not been completed for all areas and as such not all roadless areas have been evaluated.

I.F.5.C e. Relative to restoration.

Restoration has been conducted as budgets allow and emphasis has been placed on priority watersheds. However, as noted in the Biological Assessment, restoration lags behind Forest Plan direction in some critical areas.

For the Wallowa-Whitman and Umatilla forests, restoration has been focused primarily in Priority Watersheds. Restoration has proceeded on schedule.

I.G.1. Relative to eliminate or restrict access during spawning...

Certain access has been limited, but administrative limitations have resulted in incomplete effectiveness. For example on the Sawtooth National Forest in the upper Salmon River recreational and commercial floating has been restricted. Closure of dispersed camping and campgrounds has occurred in some areas. This has not eliminated take. For example, a person was recently prosecuted for spearing salmon on the Poverty spawning area in the South Fork Salmon River. Some measures identified in prior consultation have not been

implemented. For example, the ford in the upper Big Creek spawning area (Middle Fork Salmon River) is not yet eliminated. So long as the verbiage is a “should” rather than a “will”, relatively more exceptions can be expected.

Actions have been taken to eliminate or adequately restrict access to spawning habitats and redds. Actions include closures to recreational activities and restrictions to livestock use in timing and location.

On the Wallowa-Whitman and Umatilla forests, access to spawning habitat and redds has been limited for recreational users through campground closures and removal, fencing of streams to prevent livestock trampling and road closures or obliteration to prevent off-road vehicle use in these areas.

For ICBEMP broadscale issues, see response to I.F.5.

I.G.2. Relative to minimizing risk from fuel haul.

For the Wallowa-Whitman and Umatilla forests, transport of toxic chemicals has not been restricted through RHCAs as most routes are parallel or cross RHCAs. Most precautions have been taken and documented in BAs and reviewed through Level 1 streamlining teams.

See also previous discussion regarding risk.

I.G.3. Relative to water conveyance.

Not all authorizations have been brought into compliance with this guidance. The Forest Service has limited discretion regarding some actions such as Ditch Act easements. Some actions could not be brought to a condition so as to be not likely to adversely effect listed salmon or critical habitat. For example, consultations regarding Yantis Ditch and the Delbaere-Campbell ditch are based on adverse effects.

On the Wallowa-Whitman and Umatilla forests, screens on intakes have been assessed and screened to meet NMFS requirements. Permits issued after assessment of instream water needs have been assessed for downstream needs of listed salmon.

I.G.4. Relative to mining management.

The Wallowa-Whitman and Umatilla forests report that mining operating plans have been reviewed with conditions generally adhered to by the miner to protect existing fish habitat.

See also prior discussion.

I.G.5. Relative to fire suppression.

For the Idaho forests, emergency consultation on fires has been initiated in most situations. Reviews have been conducted and are reported to the NMFS as part of consultation records for prescribed fire in many cases. However, reports on all actions have not been received by NMFS.

For the Wallowa-Whitman and Umatilla forests, an outline of salmon protection responsibilities for Overhead Teams has been submitted to NMFS each year before June 1. This has taken place at the Regional or Tri-Regional level. The review of suppression and rehabilitation activities has taken place following each large fire. Reports have been submitted to NMFS which describe the fire, suppression activities and rehabilitation and their success.

I.H. Relative to procedural guidelines for watershed BAs.

On the Boise, Payette and Nez Perce forests, project screening was completed by approximately April 1995. Most units reported medium to high success in successfully completing the screening process. Often the documentation for decisions was poor, however, upon review by the PACFISH Implementation Team a large portion of the decisions made appeared to be appropriate.

For the Wallowa-Whitman and Umatilla forests, PACFISH screening took place and was completed by March, 1995. Priority watersheds were identified.

See also discussion in the Biological Assessment.

I.I. Relative to monitoring and reporting.

An interagency PACFISH Implementation Team was formed to monitor PACFISH implementation and to assist field units in compliance. The NMFS, FWS, BLM, and Forest Service have been

active participants in the Team. Each year, the Team has compiled written implementation reports from each unit and conducted field reviews of selected units in the fall. Written reports have been submitted to NMFS annually.

The DEISs for ICBEMP do not contain a specific monitoring plan however requirements found in all action alternatives direct the Forest Service and BLM to develop an integrated intergovernmental monitoring and evaluation protocol. At a minimum key ecosystem health indicators that transcend multiple planning scales should be assessed and reported to determine progress in meeting objectives. State and Regional offices would be responsible for oversight and development and implementation of annual monitoring programs. The monitoring direction contains a feedback loop that would require administrative units to modify actions if objectives are not be met due to agency actions. Since a monitoring plan has not be developed, the monitoring guidelines in the LRMP BiOp cannot be compared or evaluated.

I.J. Relative to watershed analysis.

Most Forests and Districts have been actively completing watershed analyses. Few watershed analyzes are completed for Idaho. Exceptions on the Boise, Nez Perce, and Payette National Forests include the upper South Fork Salmon River, Johnson Creek, the East Fork South Fork Salmon River, Elk Creek, and Slate Creek. Most Forests have completed between 30 to 70% of their watersheds. Completion of watershed analysis has been slower on BLM lands, in part because of lack of models to follow in rangeland habitats. Recently completion of the Herd Creek WA now provides this model.

I.K. Relative to additional guidelines for fall chinook.

A cumulative effects analysis for the Clearwater River will not be conducted by the ICBEMP project.

I.M. Relative to long-term approaches for management.

Item 1. See response to I.B.1., I.B.2., I.B.3., I.B.4., I.B.5, and I.B.6.

Item 2. The scientific assessment includes information on historic conditions and disturbance regimes. Comparisons of historic to current aquatic habitat condition were made if

information was available. Conclusions were then made as to why changes may have occurred and the role of human induced disturbance in these changes.

Item 3. The current desired range of future conditions for each alternative are a qualitative description of the expected condition if objectives are achieved. The RMO value options for Alternatives 4 and 6 do contain ranges that reflect near natural conditions.

The aquatic science team used some landscape features to predict of salmonid presence if it was unknown.

I.M. Item 4. See response I. B. 3.

I.M. Item 5. Currently, the DEISs would not revise current allocations due to the broadscale nature of information. Allocations would be made during forest plan revision.

I.M. Item 6. This element has not be included in the current DEIS direction. However, it may be incorporated during the development of the monitoring plan.

I.M. Item 7. See response I. I.

I.M. Item 8. The DEISs' current direction place a strong emphasis on collaboration with states, counties, federal agencies, tribes, and other stakeholders in accomplishing conservation and restoration objectives.

I.M. Item 9. See response I. 1.

I.M. Item 10. This recommendation has been included in Alternative 7.

PACFISH Extension Letter.

1. See response I. F. 5. C. d. ii.

2. This was completed for the Wallowa-Whitman and Umatilla.

3. The Umatilla National Forest responded to PACFISH deficiencies by report dated August 12, 1996 to the Regional Forester. They outlined procedures to insure that PACFISH is properly implemented. Progress has been noted in field implementation during 1996 and 1997. The PACFISH

Implementation Team is preparing field review for Umatilla National Forest on November 4-6, 1997 to field check progress.

4. PACFISH implementation reports have been submitted for 1995 and 1996 field seasons and are in preparation for 1997

5. Interagency Level 1 teams are in place and functioning as designed

To the best of our knowledge, any departures from guidelines have been documented as appropriate.

6. Although inconsistencies remain among administrative units relative to their proper implementation of PACFISH, overall performance has improved for BLM and Forest Service. Director and Chief have sent follow up memoranda to Regional Executives on the importance of proper implementation of PACFISH. Importance of proper implementation of PACFISH is stressed during performance appraisals of Regional Executives and during field visits.

7. PACFISH remains in place until such time as long-term management strategies are developed by ICBEMP. PACFISH will remain in place at least through 1998 field season. PACFISH is being followed and implemented with deficiencies being corrected and will be until the amendments or modifications by ICBEMP EISs.

APPENDIX 5 General Comparison of NFP and PACFISH

Appendix 5. General comparison of attributes of NFP and PACFISH (from Kelly Burnett, USFS Pacific Northwest Research Station, Corvallis, Oregon).

	Northwest Forest Plan (NFP)	**PACFISH**
Scope	Northern Spotted Owl range WA, OR, CA; Aquatic Conservation Strategy (ACS) applies to all BLM & USFS watersheds until FSEIS is amended	Outside the Northern Spotted Owl range; Applies to anadromous watersheds on National Forests: Lassen, Los Padres (CA); Battered, Clearwater, Nez Perce, Boise, Payette, Salmon-Challis, Sawtooth (ID); Malheur, Ochoco, Umatilla, Wallowa-Whitman (OR); Okanogan (WA); and BLM Districts: Bakersfield, Ukiah (CA); Coeur d'Alene, Salmon (ID); Prineville, Vale (OR); Spokane (WA) for 18 months or until geographically specific EIS is completed.
Purpose	ACS is a long-term strategy to restore and maintain the ecological health of watersheds and aquatic ecosystems	Interim strategy to halt the degradation and begin restoration of anadromous fish habitat and see that future opportunities are not foregone by management decisions while agencies are developing long-term strategies. Ensure that management has no adverse environmental effects that could result in the extinction or further endangerment of at-risk anadromous salmon stocks.
Application	All activities after the ROD was signed must comply with the ACS	On all proposed or new projects and activities; and all ongoing projects and activities considered to pose unacceptable risk based on a project-by-project assessment.
Implementation	According to the ROD	Signed Feb. 24, 1995
Allocations	Attempts to integrate aquatic conservation with upslope management; Late Successional Reserves and Riparian Reserves	Riparian Habitat Conservation Areas
Goals	ACS qualitative objectives aimed at restoring and maintaining ecological health; objectives to describe aquatic, watershed and landscape features	Similar to ACS qualitative objectives in being aimed at restoring and maintaining ecological health but describe only aquatic and riparian features
Quantitative Objectives	No regional criteria or numeric objectives; local criteria and numerics may be developed by Watershed Analysis (WA); no direction for relating these to S&G or ACS Objectives	Regional criteria and numeric objectives provide the criteria against which attainment or progress toward attainment of goals is measured but not a threshold or a ceiling; 1 Key and 5 supporting features; Water Temperature Standard (changed from Draft EA): no measurable increase <64 F for migration and rearing and <60 F for spawning; systems are stratified by forested and non-; not all applicable RMO's must be met in every reach; criteria and numerics for RMOs can be modified, within range of listed salmon in consultation w/ NMFS, on the basis of WA or w/o WA if sufficient watershed or stream reach-specific data support the change. RMOs defined for 3-7th order stream channels

Riparian Protection (Riparian Reserves)	Interim widths designed to provide a high level of protection; post WA boundaries for permanently flowing streams should approximate interim widths; decisions to modify should consider aquatic and terrestrial species; interim width for all intermittent streams - 1 Site Potential Tree (SPT) or 100 ft. 5 categories: Fish bearing streams; permanently flowing non-fish bearing streams; constructed ponds and reservoirs, and w etlands >1acre; lakes and natural ponds; seasonally flowing or intermittent streams, wetlands <1acre, and unstable and potentially unstable areas.	Interim widths designated on all anadromous watersheds designed to provide a high level of protection; boundaries can be modified, within range of listed salmon in consultation w/ NMFS, on the basis of WA or w/o WA if sufficient watershed or stream reach-specific data support the change; no direction for post-WA boundaries on fish bearing streams; decisions to modify only considers aquatic species. 4 categories: Fish bearing streams; permanently flowing non-fish bearing streams; ponds, reservoirs, wetlands >1acre, lakes; seasonally flowing or intermittent streams, wetlands <1acre, and landslides or landslide-prone areas; lakes and natural ponds - 150ft (instead of 300ft in ROD); RHCAs extended to include moderate to highly unstable areas (instead of unstable and potentially unstable in ROD); intermittent streams - Non-Key Watersheds ½ SPT or 50 ft and Key Watersheds 1 SPT or 100 feet (instead of 1 SPT or 100ft on all intermittents in ROD).

S&G	No programmed timber harvest in RR and, except for salvage, only harvest that is required to attain ACS; S&G to ensure that grazing, roads, mining, recreation, lands, restoration, research, and fire management activities generally "meet ACS objectives";	S&G generally written to ensure that grazing, roads, mining, recreation, lands, restoration, and fire management activity is allowed when it "will not retard or prevent attainment of RMOs"; generally suspends rather than eliminates activity. TM-1 No programmed timber harvest in RHCA but any volume harvested can contribute to the sale program; TM-1a only allow salvage and fuel wood cutting in RHCA in the event of catastrophic damage when woody debris needs are met and cutting would not retard or prevent attaining RMO's and WA is required prior to salvage cutting for watersheds with listed salmon or critical habitat. **In ROD but omitted in PACFISH:** RF-2g which requires that wetlands be avoided when constructing new roads; RF-3 WA to determine the influence of each road on RMOs; goal of all wildfire suppression in Riparian Reserves is to limit fire size until WA or provincial analyses are complete. **In PACFISH but not in ROD:** RF-2c 1.6 implementation and effectiveness monitoring plans for road stability, drainage, and erosion control; RF-2c1.7 mitigation plans for road failures; RF-2 f avoid sidecasting of snow and prohibit sidecasting of road material on segments abutting RHCAs in watersheds with listed salmonids or designated critical habitat; GM-4 wild horse and burro management; RM-1 WA required before construction of new recreation facilities in RHCA; MM-1 require mineral Reclamation Plans contain measurable attainment and bond release criteria; MM-6 development of reporting requirements for mineral activities; FM-2&3 require a fishery biologist in pre-suppression fire planning to determine incident base and helibase locations and in determining need to apply chemical retardants in RHCA; LH-1 does not limit to Key Watersheds the need for hydroelectric and surface water development, to require instream flows and habitat conditions that maintain or restore riparian resources ....; RA-4 prohibits storage of fuels and other toxicants in RHCAs; WR-2 develop watershed-based CRMPs to meet RMOs. MM-4 Prohibit surface occupancy in RHCA for oil, gas and geothermal exploration where leases and contracts do not exist "except where no other options exist" (quoted qualifier not in ROD). MM-5 Permit sand and gravel extraction in RHCA only if no alternatives exist (ROD allows if ACS objectives can be met).
Key Watersheds	No timber harvest until a WA is completed; no net increase in roads; no new roads in roadless areas; highest priority for restoration; Tier I & II; Named	Not yet named but will be based on ROD criteria in the geographically specific EISs; in the interim, all watersheds that contain designated critical habitat for listed species will be treated as Key Watersheds; High priority for protection (e.g. interim buffers on intermittent streams wider than in non-Key Watersheds) and restoration of habitat for listed stocks, stocks of special interest or concern, or salmonid assemblages of critical value for productivity or biodiversity. WA not required prior to management.

Watershed Analysis	Used to set context for RR modification based on site analysis and before building new roads in RR; Pilot Program is issue driven analysis to inform management decisions and includes a formal, external review of completed analyses; 1994-1996 WA is project driven to determine if proposed actions are consistent with the objectives of the S&G (doesn't define proposed) and provides no mechanism for review; does not require NEPA since no management plan or prescriptions result; uses Federal Guide for Watershed Analysis.	Used to set context for changing RMO's, modifying RHCA based on site analysis and before building new roads in RHCA; does not require NEPA since no management plan or prescriptions result; consider and use any potentially relevant procedures in developing a protocol; during the period of interim direction at least 4 - 5 prototype WA will be conducted within the Snake River Basin; agencies will develop a process to certify analyses.
Restoration	Viability ratings predicated on 10 year funding of a detailed program of road, riparian, and inchannel restoration; ROD doesn't mention funding; causes of degradation must be identified and rectified	Assumes no new funding but that some funds will be retargeted; identifies need for a regional strategy; use of WA to develop appropriate restoration approaches, specific habitat objectives; will include monitoring and evaluation.
Monitoring	Describes a long-term commitment and outlines a plan for implementation, effectiveness and validation monitoring; a plan and protocols are under development	Describes implementation and effectiveness monitoring requirements
Roadless	No new roads in KW; WA required before new roads in non-Key Watersheds;	Not addressed
Research	Requests funding and identifies need	Not addressed
Oversight	ROD suggests monitoring protocol review by REO but other topics may be referred	NMFS in areas of listed anadromous fish or designated critical habitat; WA certification

APPENDIX 6 Riparian areas comparison of prescriptions under NFP and PACFISH.

Appendix 6. Riparian areas comparison of prescriptions under NFP and PACFISH.

	Northwest Forest Plan (NFP)	PACFISH
Activity	**Prescriptions Within Riparian Reserve or RHCA**	
Timber Harvest	Generally prohibited. Three exceptions: After catastrophic events, allow salvage and fuel wood cutting if required to attain Aquatic Conservation Strategy (ACS) objectives; When watershed analysis (WA) determines ACS objectives are not adversely affected; When silvicultural practices are needed to attain ACS objectives.	Generally prohibited. Two exceptions: After catastrophic events, allow salvage in RHCAs where cutting would not retard attainment of Riparian Management Objectives (RMOs) - WA required first in watersheds with listed salmon; When silvicultural practices are necessary to achieve RMOs.
Yarding	Not addressed.	Not addressed.
Existing Roads	Restrict sidecasting to prevent introducing sediments to streams. Prepare operation and maintenance criteria that govern road operation, maintenance, and management. After WA, reconstruct or decommission as necessary to meet ACS objectives.	Sidecasting prohibited in RHCAs. Road management plan required with minimum of 7 specified components. Outsloping preferred except where inappropriate. Route drainage away from unstable areas.
New Roads or Landings	Minimize road and landing locations in Riparian Reserves. Complete WA prior to construction in Riparian Reserves. Prepare road design criteria, elements and standards that govern construction and reconstruction. Avoid wetlands entirely.	Completion of WA required before construction of any new roads or landings in RHCAs. Minimize roads and landings in RHCAs.
New Stream Crossings	Must accommodate 100 yr flood, including boatload and debris, and provide fish passage. If failure, flow must not be diverted along road.	Must accommodate 100 yr flood, including boatload and debris, and provide fish passage. If failure, flow must not be diverted along road.
Fish Passage	Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.	Provide and maintain fish passage at all road crossings of existing and potential fish-bearing stream
Existing Diversions	For existing support facilities inside Riparian Reserves, provide recommendations to FERC that ensure ACS objectives are met. If these objectives cannot be met, recommend relocation.	For existing support facilities inside Riparian Reserves, provide recommendations to FERC that ensure RMOs are met. If RMOs cannot be met, recommend relocation.

	Northwest Forest Plan (NFP)	PACFISH
New Diversions	Require instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage.	Require instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction and growth.
Mining	Requires a reclamation plan, approved Plan of Operations, and reclamation bond. Locate structures, support facilities and roads outside Riparian Reserves.	Permit sand and gravel mining in RHCAs only if no alternatives exist, the action will not retard attainment of RMOs, and adverse effects to listed anadromous fish can be avoided.
Grazing	Adjust grazing practices to eliminate impacts that retard or prevent attainment of ACS objectives. If adjusting practices is not effective, eliminate grazing.	Modify or suspend grazing as necessary to meet RMOs and avoid adverse effects on listed salmon.
Other Livestock Management	Locate new livestock facilities outside Riparian Reserves. Existing facilities inside Riparian Reserves must allow attainment of ACS objectives, otherwise remove. Limit trailing, bedding, watering and other handling to areas and times that will ensure ACS objectives are met.	Locate new facilities outside RHCAs. Assure that existing facilities do not prevent attainment of RMOs. Relocate if necessary. Limit trailing, bedding, watering and other handling to areas and times that will not retard attainment of RMOs.
Fire/Fuels Management	Design fuels management to meet ACS objectives. Locate facilities outside of Riparian Reserves. Minimize delivery of retardants to surface waters.	Design fuel treatment, fire suppression and prescribed burn programs to contribute to attainment of RMOs. Locate facilities outside RHCAs if at all possible. Avoid application of suppressants to surface waters.
Herbicides, Pesticides and Other Chemicals	Applications must avoid adverse effects to listed fish.	Applications must avoid adverse effects to listed fish.